User Manual

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Draco tera

Model:
K480 Series

Firmware:
V02.10

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1 About This Manual

1.1 Scope

This manual describes how to install your Draco tera, how to operate it and how to perform trouble shooting.

1.2 Validity

This manual is valid for all devices listed on the front page. The product code is printed on the base of the devices.

1.3 Cautions and Notes

The following symbols are used in this manual:

This symbol indicates an important operating instruction that should be followed to avoid any potential damage to hardware or property, loss of data, or personal injury.

This symbol indicates important information to help you make the best use of this product.

This symbol indicates best practice information to show recommended and optimal ways to use this product in an efficient way.

1.4 Spellings

You can find the following spellings in the manual:

Spelling	Description
<key>	Description of a key on the keyboard
<key> + <key>	Press keys simultaneously
<key>, <key>	Press keys successively
2x <key>	Press key 2x in quick succession (cf. mouse double click)
Menu item	Description of a menu item in the software
Menu item > Menu item	Select menu items successively
Bold print	Description of terms that are used in the device software

2 Safety Instructions

To ensure reliable and safe long-term operation of your Draco tera please note the following guidelines:

Installation

- ➔ Only use the device according to this User Manual. Otherwise the provided safety can be affected.
- ➔ Only use in dry, indoor environments.
- ➔ The Draco tera and the power supply units can get warm. Do not situate them in an enclosed space without any airflow.
- ➔ Do not obscure ventilation holes.
- ➔ Only use power supplies originally supplied with the product or manufacturer-approved replacements. Do not use a power supply if it appears to be defective or has a damaged chassis.
- ➔ Connect all power supplies to grounded outlets. In each case, ensure that the ground connection is maintained from the outlet socket through to the power supply's AC power input.
- ➔ Do not connect the link interface to any other equipment, particularly network or telecommunications equipment.
- ➔ Only connect devices to the serial interface that are sufficiently secured against short circuit currents and false voltages at the serial interface.
- ➔ To disconnect the Draco tera from the power supply, remove the power cord cables of all power supply units that are in use or set the power switch (if available) to the off-position.
- ➔ Take any required ESD precautions.

In order to disconnect the device completely from the electric circuit, all power cables have to be removed.

Repair

- ➔ Do not attempt to open or repair a power supply unit.
- ➔ Do not attempt to open or repair the Draco tera. There are no user serviceable parts inside.
- ➔ Please contact your dealer or manufacturer if there is a fault.

3 Description

3.1 Application

The Draco tera matrix is used to establish connections from consoles (monitor, keyboard, mouse, and other peripheral devices) to various sources (computer, CPU).

In a maximum configuration, up to 288 independent ports can be defined and switched either as a console or a CPU.

The Draco tera matrix is mainly specified for the use with extenders that are able to transmit video, KVM and USB 2.0 signals. But it can be also run as a video matrix.

The connection between the matrix and the peripheral devices, such as KVM extenders or video sources, can be made by Cat X, fiber or coaxial cables.

The matrix serves as a repeater. Thus, the matrix can be run at a maximum distance of 10 km from the consoles and 10 km from the sources.

3.2 Access Options

You have the following options to access the Draco tera for configuration and operation:

Access Option	Symbol
OSD	
Java tool	
Serial interface	

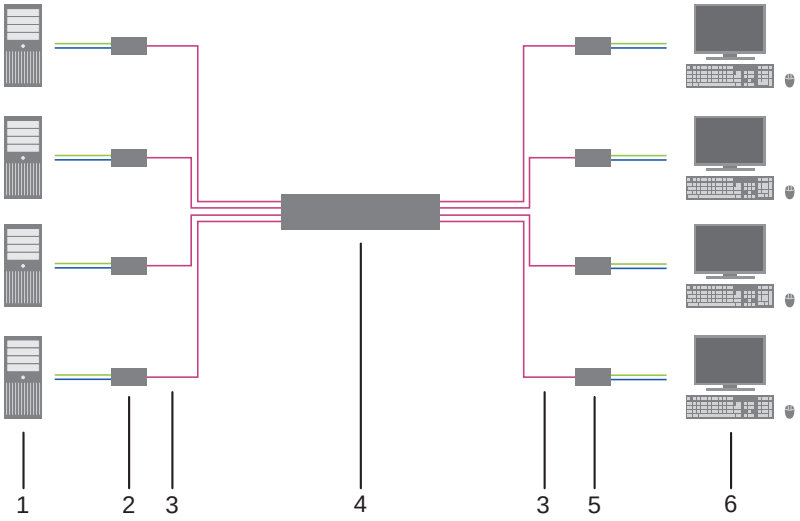
3.3 System Overview

A Draco tera matrix system consists of a Draco tera matrix and, for KVM applications, of one or more CPU Units / CON Units. The Draco tera matrix is connected to the CPU Units / CON Units by interconnect cables or connected directly to the video devices where used as a video matrix.

The CPU units are connected directly to the sources (computer, CPU) by the provided cables.

Monitor(s), keyboard and mouse are connected to the CON units.

The communication between the Draco tera matrix and the CPU Units / CON Units takes place over the respective interconnect cables.



System Overview (exemplary)

1 Source (computer, CPU)

2 CPU Units

3 Interconnect cable

4 Draco tera matrix

5 CON Units

6 Console (monitor, keyboard, mouse)

See Chapter 4.3, Page 47 for installation examples.

3.4 Product Range

Part No.	Description
K480-288	Draco tera matrix with 288 ports, empty, free configuration
K480-160	Draco tera matrix with 160 ports, empty, free configuration
K480-080	Draco tera matrix with 80 ports, empty, free configuration
K480-048	Draco tera matrix with 48 ports, empty, free configuration

3.5 Accessories

Part No.	Description
480-B1	Java-Tool, Extended Switching, Presets
480-B2	480-B1, API
480-B3	SNMP, Syslog
480-B4	Cascading, stacking
480-B5	Multi-Screen Control
480-C8	Draco tera Cat X I/O board
480-S8	Draco tera fiber I/O board, Single-mode
480-V8	Draco tera fiber I/O board, Single-mode, 3,125 Gbit/s
480-SDI16	Draco tera I/O board video
480-X8	Draco tera fiber I/O board, empty, free configuration
480-CTRL	Draco tera CPU board
459-1C	Cat X GBIC for the use with Draco tera
459-1S	Single-mode GBIC for the use with Draco minor / major / tera
459-1V	Single-mode GBIC for the use with Draco tera (3.125 Gbit/s)
459-2FT	Single-mode GBIC (transmitter), dual-unidirectional, for the use with Draco tera (HD-SDI)
459-3FT	Single-mode GBIC (transmitter), dual-unidirectional, for the use with Draco tera (3G-SDI)
459-2BT	Coax GBIC (transmitter), dual-unidirectional, for the use with Draco tera (HD-SDI)

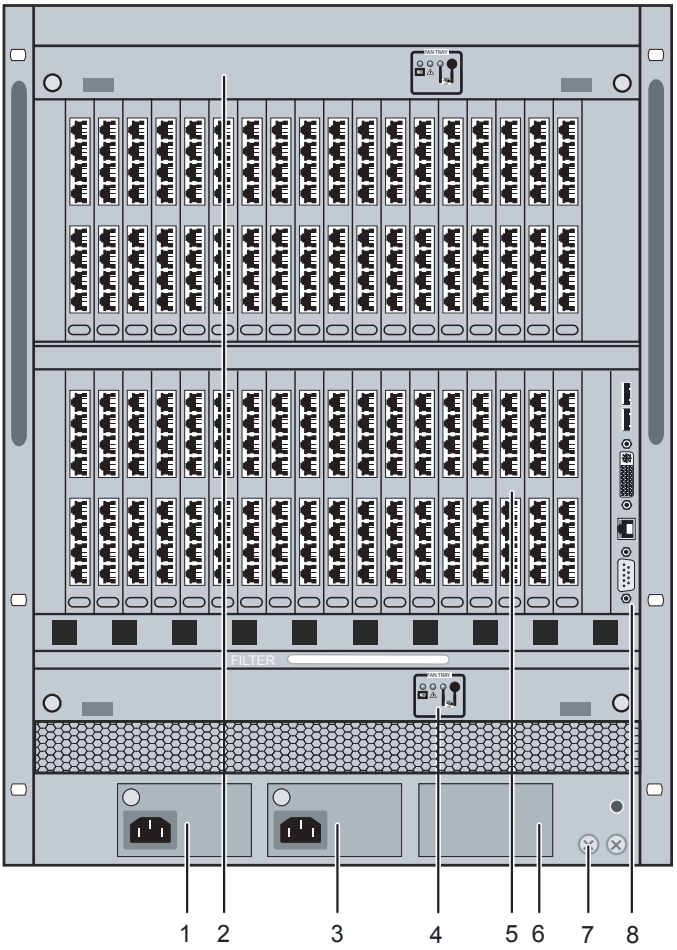
Part No.	Description
459-3BT	Coax GBIC (transmitter), dual-unidirectional, for the use with Draco tera (3G-SDI)
459-2FR	Single-mode GBIC (receiver), dual-unidirectional, for the use with Draco tera (HD-SDI)
459-3FR	Single-mode GBIC (receiver), dual-unidirectional, for the use with Draco tera (3G-SDI)
459-2BR	Coax GBIC (receiver), dual-unidirectional, for the use with Draco tera (HD-SDI)
459-3BR	Coax GBIC (receiver), dual-unidirectional, for the use with Draco tera (3G-SDI)
459-BMB	Adapter cable BNC to mini BNC to adapt regular BNC cables to mini BNC SFP
480-FAN160	Draco tera 288/160 fan tray (spare part)
480-FAN80	Draco tera 80 fan tray (spare part)
480-FAN48	Draco tera 48 fan tray (spare part)
480-RED160	Draco tera 288/160 plug-in power supply unit (spare part or redundancy)
480-RED80	Draco tera 80 plug-in power supply unit (spare part or redundancy)
480-FLTR160	Draco tera 288/160 filter pads as consumable supply
480-FLTR80	Draco tera 80 filter pads as consumable supply
480-FLTR48	Draco tera 48 filter pads as consumable supply

You can find appropriate extenders or other components in Chapter 7.3, Page 184)..

3.6 Device Views

The following views of the Draco tera matrix illustrate the various available chassis types.

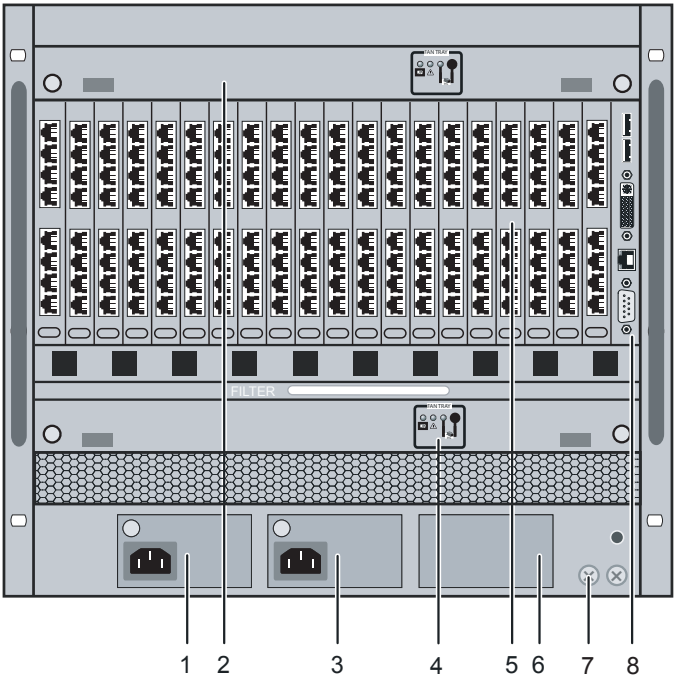
3.6.1 Draco tera 288 Port



Front View

1 Slot for power supply unit 1
2 Slot for fan tray 1
3 Slot for power supply unit 2
4 Slot for fan tray 2
5 Slot for I/O boards #1–36
6 Slot for power supply unit 3
7 Slot for CPU board
8 Grounding

3.6.2 Draco tera 160 Port



Front View

1 Slot for power supply unit 1

2 Slot for fan tray 1

3 Slot for power supply unit 2

4 Slot for fan tray 2

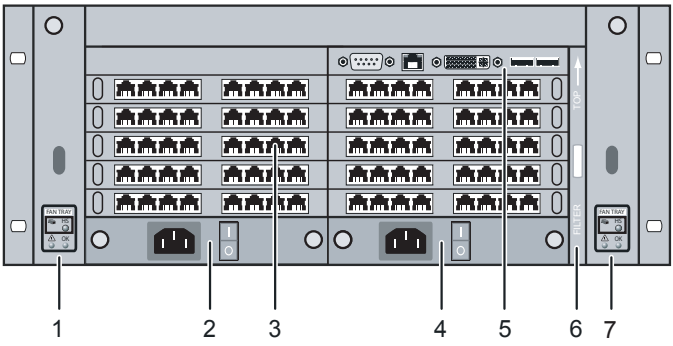
5 Slot for I/O boards #1–20

6 Slot for power supply unit 3

7 Slot for CPU board

8 Grounding

3.6.3 Draco tera 80 Port



Front View

1 Slot for fan tray

2 Slot for power supply unit 1

3 Slot for I/O boards #1–10

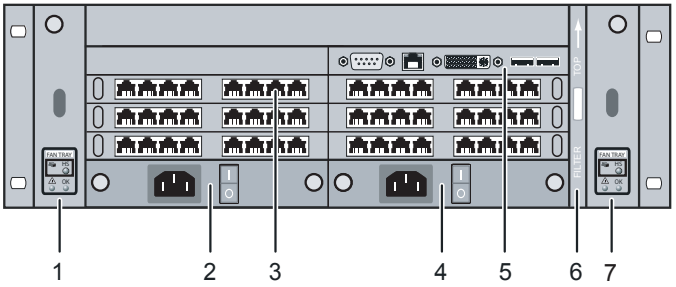
4 Slot for power supply unit 2

5 Slot for CPU board

6 Slot for air filter

7 Slot for fan tray 2

3.6.4 Draco tera 48 Port



Front View

1 Slot for fan tray

2 Slot for power supply unit 1

3 Slot for I/O boards #1–6

4 Slot for power supply unit 2

5 Slot for CPU board

6 Slot for air filter

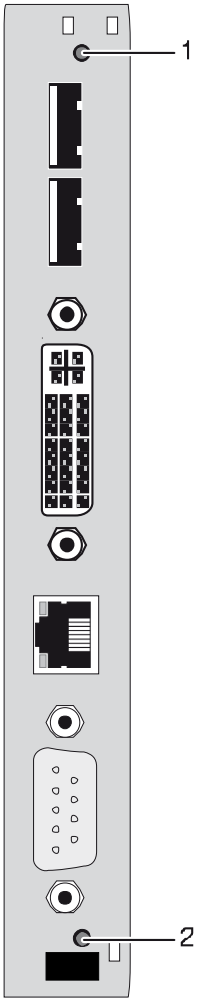
7 Slot for fan tray 2

3.7 Diagnostics and Status

3.7.1 Status LEDs

The Draco tera components are fitted with the following LEDs for overall status indication:

CPU Board



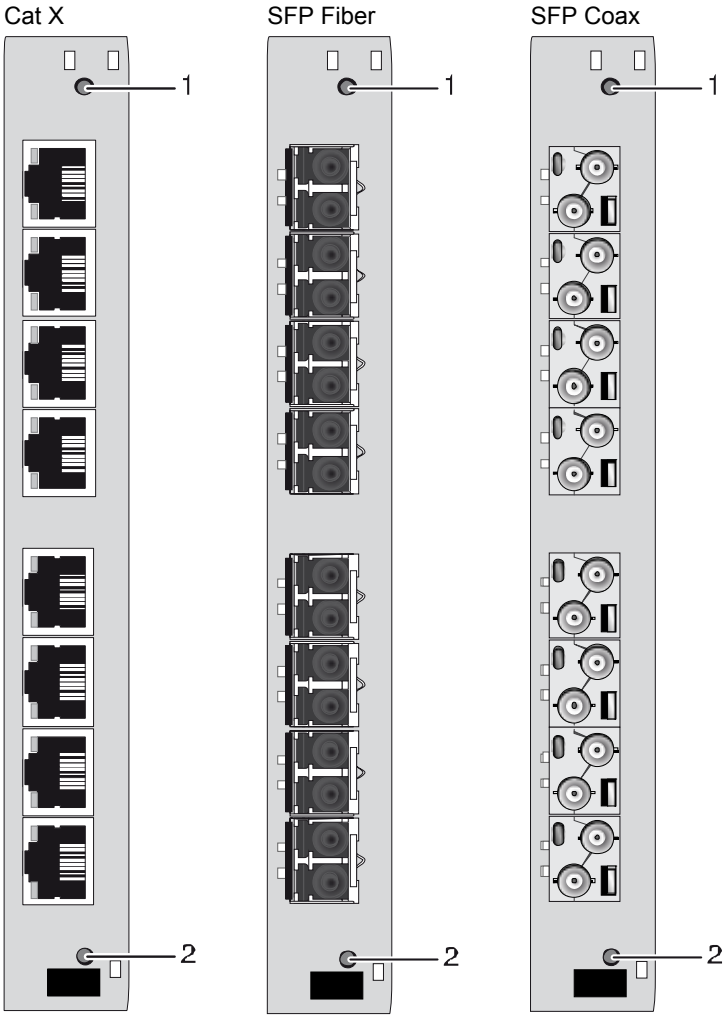
Front View

Status LEDs on CPU board:

Pos.	LED	Status	Description
1	**Status 1**	White	CPU board is in registration process
		Blue flashing	Registration at the matrix is started
		Red flashing	Registration in progress
		Green flashing	Operating condition
		Green	CPU board de-registered
2	**Status 2**	White	CPU board is in registration process
		Red flashing	Registration at the matrix is started
		Off	Operating condition

Due to variations in LED type "white" might also appear as light purple or light blue.

I/O Board



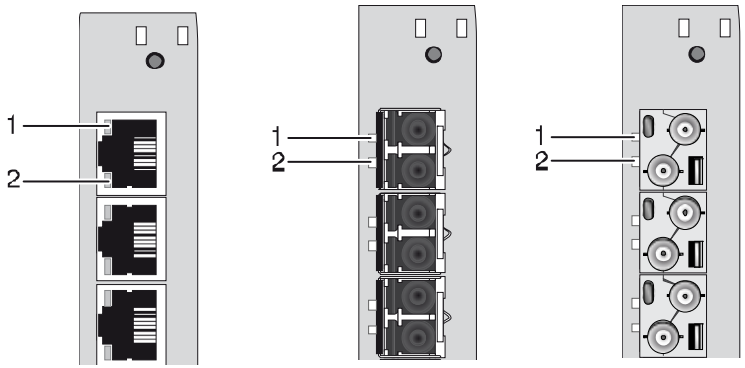
Front View

Status LEDs at I/O boards:

Pos.	LED	Status	Description
1	**Status 1**	Light blue	I/O board in boot process
		Red flashing	I/O board in registration process
		Red/ Yellow flashing	I/O board in Service Mode or firmware conflict with CPU board
		Green flashing	Operating condition, I/O board registered at the matrix
		Green	I/O board de-registered (locking pin pulled out)
2	**Status 2**	White	I/O board in boot process
		Blue	I/O board in registration process
		Blue flashing	Operating condition, communication active with CPU board active
		Red flashing	I/O board de-registered (locking pin pulled out)

Ports I/O Board

Cat X SFP Fiber SFP Coax



Front View

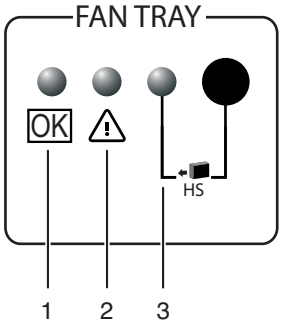
1 Status LED 1

2 Status LED 2

Status LEDs at the ports of the I/O boards:

Pos.	LED	Status	Description
1	**Link status** (orange)	Off	Port not activated
		Flashing	Port activated, no connection via interconnect cable
2	**Link status** (green)	Off	Port not activated
		Flashing	Port activated, no connection via interconnect cable
		On	Connection via interconnect cable ok, data traffic active

Fan Tray



Front View

1 Status LED 1

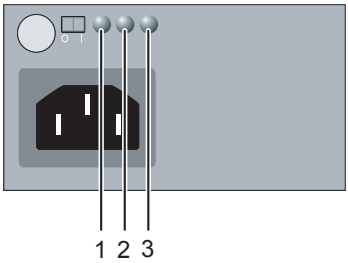
2 Status LED 1

3 Hot Swap LED

Status LEDs of the fan trays:

Pos.	LED	Status	Description
1	**Status 1** (green)	On	Operating condition
2	**Status 2** (red)	Off	Operating condition
		On	Error indication
3	**Hot Swap** (blue)	Off	Hot Swap option deactivated
		On	Hot Swap option activated

Power Supply Unit Draco tera 288/160



Front View

Status LEDs of the power supply units

Pos.	LED	Status	Description
1	**AC Input OK** (green)	On	Operating condition
2	**DC Output OK** (green)	On	Operating condition
3	**O/T** (yellow)	Off	Normal temperature
		On	High temperature

Power Supply Unit Draco tera 80/48

Front View

Pos.	LED	Status	Description
1	**DC Input OK** (green)	On	Operating condition
		Off	No power supply
	DC Input (red)	On	Power supply unit not active, Matrix is powered by second power supply unit
		Off	Operating condition

3.7.2 Port Status

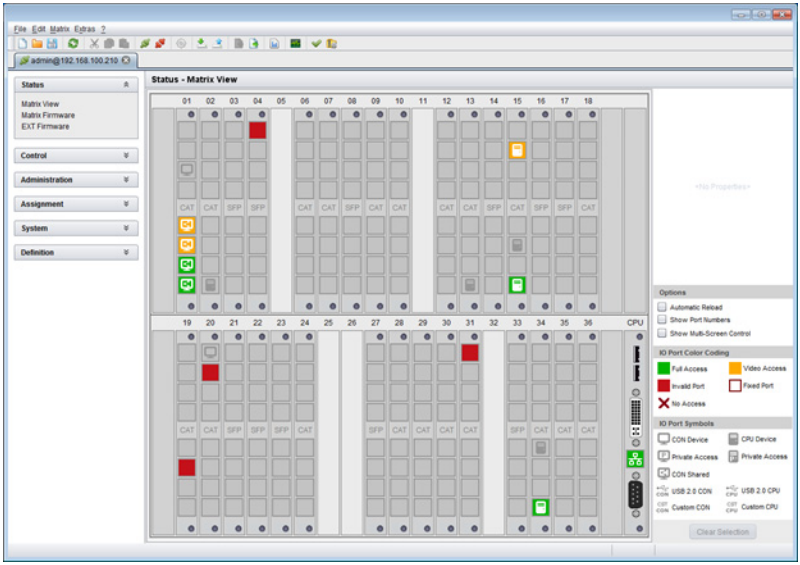
The connections and the switching status between the various consoles and CPUs are shown in this menu.

You have the following possibilities to access the menu:

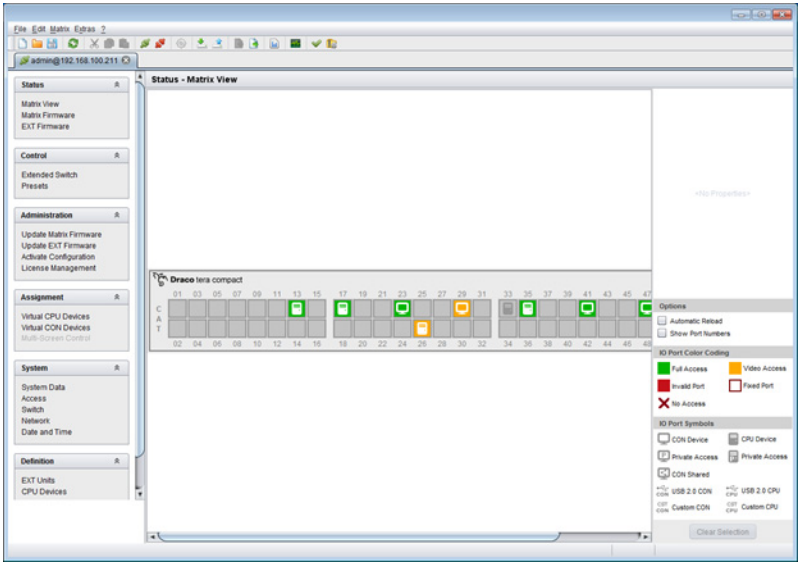
Java Tool

The current port configuration of the Draco tera is illustrated in this menu.

➔ Select **Status > Matrix View** in the task area when connected to the matrix.



*Menu **Status – Matrix View** (example #1)*



*Menu **Status – Matrix View** (example #2)*

The colors indicate the connection status:

Color	Description
Grey	Port not connected
Yellow	Video connection
Green	KVM connection
Red	Faulty Port

The symbol indicates the extender that is recognized and defined at a certain port:

Symbol	Description
	Port connected to a CPU Unit
	Port is connected to a CPU Unit that is switched to a CON Unit in **Private Mode** (see Chapter 3.7.3, Page 30).
	Port connected to a CON Unit
	Port connected to a CON Unit with **Shared Access** to a CPU.
	Port is connected to a CON Unit that is connected to a CPU Unit in **Private Mode** (see Chapter 3.7.3, Page 30).
	Port connected to an USB 2.0 CPU Unit
	Port connected to an USB 2.0 CON Unit
	Port is configured as a CON port for customer specific applications
	Port is configured as a CPU port for customer specifiv applications

- Red framed ports are defined as "fixed" (e. g. for USB 2.0 connections).
- The port with four static blue squares is currently selected.
- If a port is selected, all the other ports will be shown transparently, except of those that are connected to the currently selected port. A selection can be cleared by pressing the button **Clear Selection**.
- If there is shown a red cross on a port when switching via Matrix View, the console to be connected does not have access rights to the respecting CPU at this port.

➔ In order to show the extender information of the currently selected port in the right part of the working area, press the left mouse button.

The following information is available:

Field	Description
Extender Name	Name of the selected extenders
Extender Type	Type of the selected extender
Port ID	Number of the selected port
Device Name	Name of the connected console or CPU
Connections	Listing of assigned connections to the marked port (Full Access or Video Access)

➔ In order to open the context menu for the currently selected port with further functions, press the right mouse button.

The following context functions are available:

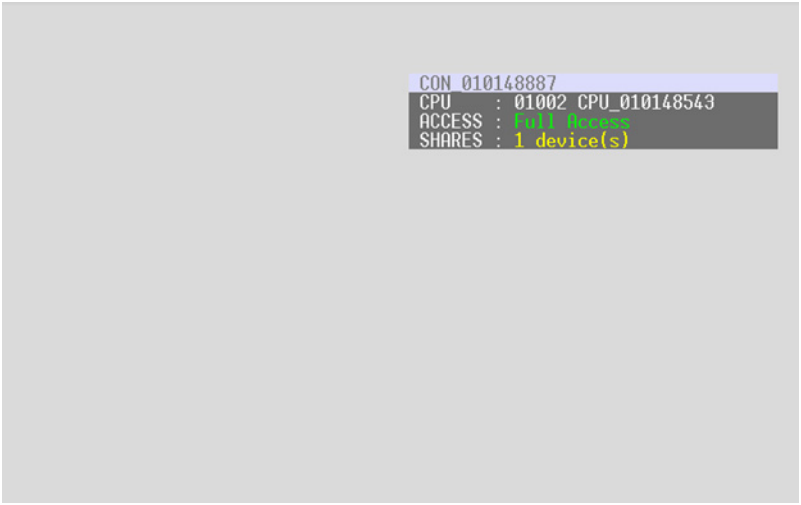
Function	Description
Open Extender	The menu for definition of the currently selected extender will be opened
Open Device	The menu for definition of the currently selected console or CPU will be opened
Switch	The menu for execution of switching operations will be opened

In order to reload the **Matrix View** you have the following possibilities:

- Press the key <F5> on a connected keyboard
- Execute **Edit > Reload** in the menu bar
- Press the Button **Reload** in the tool bar

3.7.3 Extender OSD

All extenders used with the Draco tera are provided with their own OSD to display the connection status of the own console.



*Example View **Extender OSD***

The following information is shown in the OSD menu:

Field	Description
CON	Name of the own console
CPU	Name of the currently connected CPU
ACCESS	• **Full Access**: The own console has a KVM connection to the displayed CPU. • **Video Access**: The own console has a video only connection to the displayed CPU. • **Private Mode**: The own console has a Private Mode connection to the displayed CPU. • **not connected**: The own console is not connected to a CPU.
SHARED	**x device(s)** shows the exact number of devices that also have a connection to the current CPU of the own console (e.g. 3 devices). If the field remains empty, there only exists the own connection to the current CPU.

If the options **Mouse Connect** or **Keyboard Connect** (see Chapter 5.4.4, Page 86) are used, the name of the console with keyboard / mouse control will be displayed at those consoles that do not have K/M control at the moment. The console is displayed in yellow color under **Access**.

3.7.4 Network Status

The current network configuration is shown in this menu.

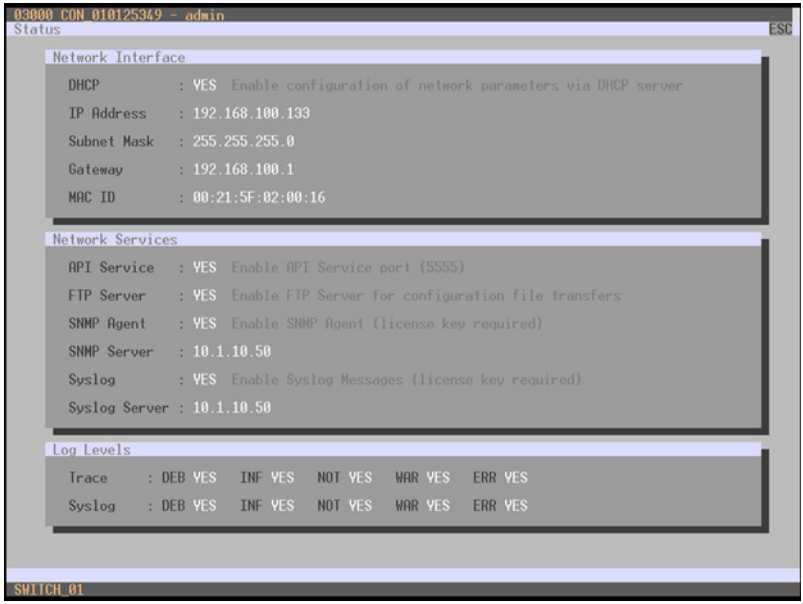
You have the following possibilities to access the menu:

The following information is shown in this menu:

Field	Description
DHCP	Information, if the network settings are applied dynamically. Display **Y** (Yes) or **N** (No)
IP Address	Information about the IP address as provided manually or via DHCP
Subnet Mask	Information about the subnet mask as provided manually or via DHCP
Gateway	Information about the gateway address as provided manually or via DHCP
MAC ID	Information about the MAC address of the matrix

OSD

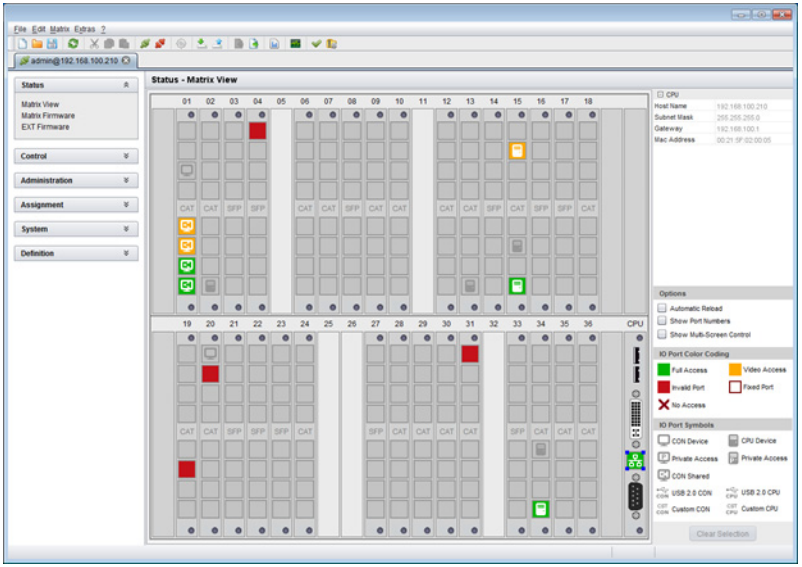
➔ Select **Status > Network** in the main menu.


03000_CON_010125349 - admin
Status
ESC
Network Interface
DHCP : YES Enable configuration of network parameters via DHCP server
IP Address : 192.168.100.133
Subnet Mask : 255.255.255.0
Gateway : 192.168.100.1
MAC ID : 00:21:5F:02:00:16
Network Services
API Service : YES Enable API Service port (5555)
FTP Server : YES Enable FTP Server for configuration file transfers
SNMP Agent : YES Enable SNMP Agent (license key required)
SNMP Server : 10.1.10.50
Syslog : YES Enable Syslog Messages (license key required)
Syslog Server : 10.1.10.50
Log Levels
Trace : DEB YES INF YES NOT YES WAR YES ERR YES
Syslog : DEB YES INF YES NOT YES WAR YES ERR YES
SWITCH_01

*Menu **Status – Network***

Java Tool

1. Select **Status > Matrix View** in the task area.



*Menu **Status – Matrix View***

2. Use the left mouse button to click on the network port of the CPU board.

   The corresponding network status will be shown in the right part of the working area.

3.7.5 Firmware Status Matrix

The current firmware status of the installed boards is shown in this menu.

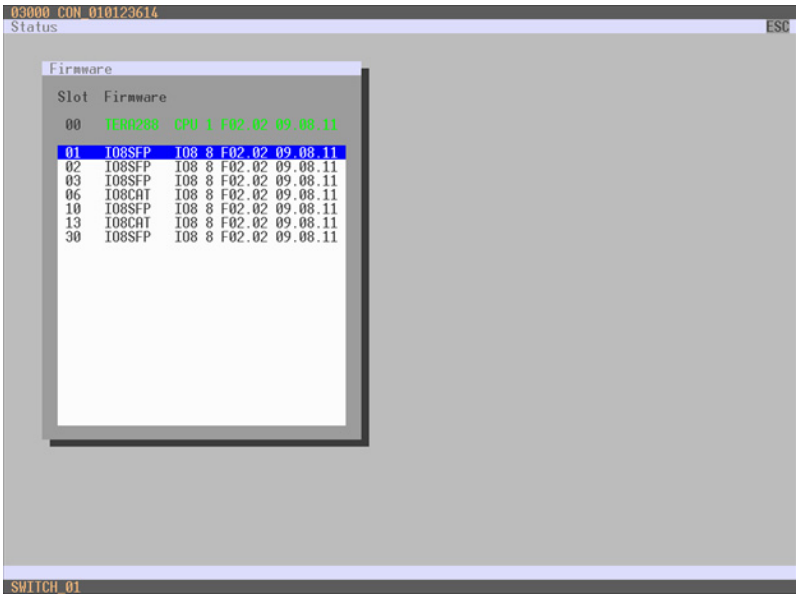
You have the following possibilities to access the menu:

The following information is shown in this menu:

Field	Description
Name	Description of the modules
Type	Type number
Ports	Number of ports
Version	Complete description of the firmware version
Date	Date of the firmware version
Status	Module status

OSD

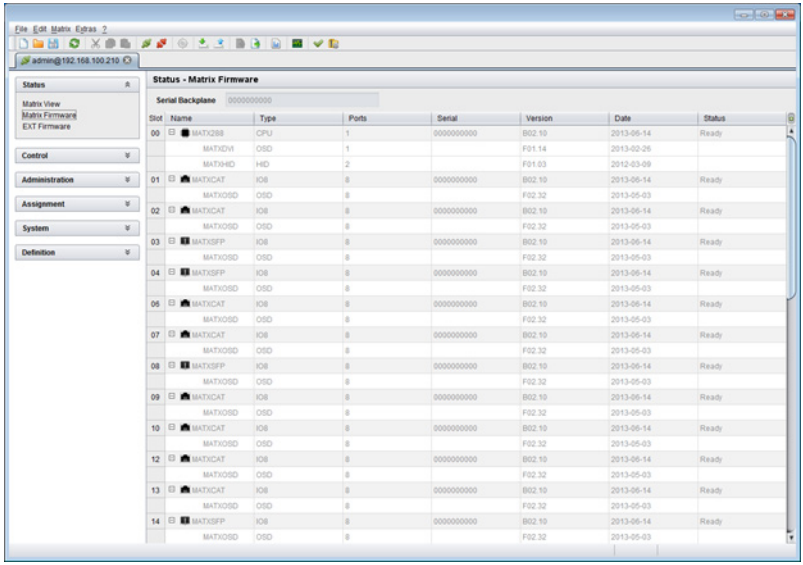
➔ Select **Status > Firmware** in the main menu.



*Menu **Status – Firmware***

Java Tool

1. Select **Status > Matrix Firmware** in the task area.



*Menu **Status – Matrix Firmware***

2. In order to read out the firmware status and store it locally (file extension **.dtf**), select **Matrix > Save Firmware Status to File...**.
3. In order to read out the overall status of the matrix and store it locally (file extension **.zip**), select **Matrix > Save Status to File...** or press the respective button in the symbol bar.

The various modules can expanded and retracted in the column **Name** by clicking with the left mouse button on the plus or minus symbols.

By clicking on the plus resp. minus symbol in the upper right corner of the working area you can expand and retract all module information with one click on the left mouse button.

3.7.6 Firmware Status Extender

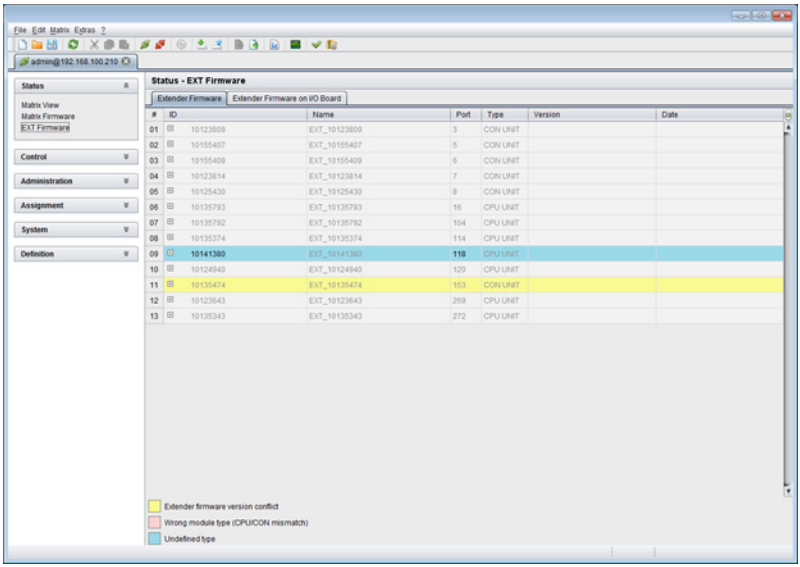
The current firmware status of the connected extenders is shown in this menu.

You have the following possibility to access the menu:

The following information is shown in this menu:

Field	Description
Name	Description of the firmware
Type	Description of the extender module
Ports	Number of ports
Cur. Version	Description of the current firmware version
Cur. Date	Date of the current firmware version

➔ Select **Status > EXT Firmware** in the task area.



*Menu **Status – EXT Firmware***

3.8 Trace Function

All events, e.g. activities and switching operations of the Draco tera matrix, are logged and displayed in this menu.

This function is used for diagnostic purposes.

You have the possibility to request various trace views in the menu:

The following information is shown in this menu:

Field	Description
Date	Date stamp
Time	Time stamp
Message	Detailed description of the event

Trace possibilities

➔ Select **Status > Trace IO Board** in the main menu to check the events on your current I/O board.

➔ Select **Status > Trace Matrix** to check the matrix events.

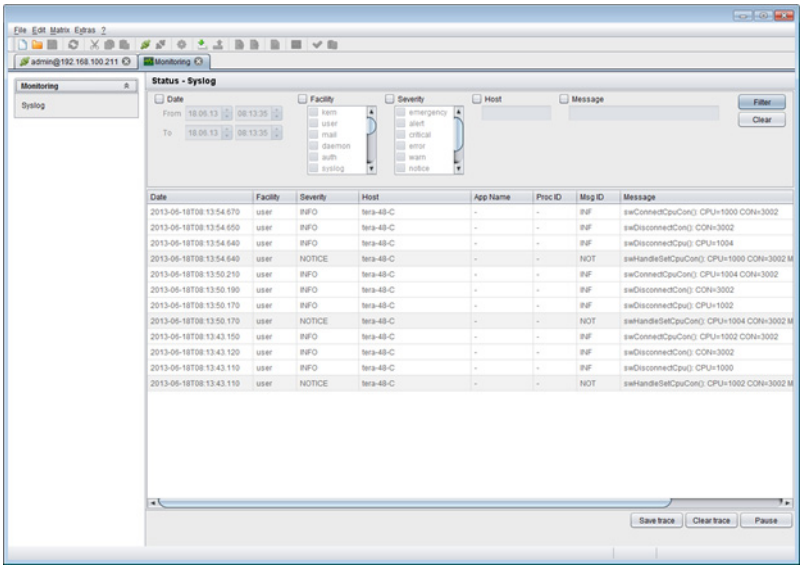
3.9 Syslog Monitoring

The complete logging of the Draco tera matrix regarding activities, switching operations and the surveillance of function critical components like fans or power supply units take place in this menu.

You have the following possibility to access the menu:

In order to start Syslog Monitoring proceed as follows:

➔ Select the symbol **Monitoring** in the symbol bar.



*Menu **Monitoring – Syslog***

The logging of system activities starts when opening the menu **Monitoring** and remains active until the appropriate tab will be closed.

Syslog messages are transmitted via UDP. Therefore, port 514 within the used network should not be blocked, e.g. by a firewall.

During logging the activities are written continuously into logging files and stored locally. This process can be set with various options.

Options

➔ Select **Extras > Options** in the menu bar and open the tab **Syslog**.

The following options are available:

Option	Description
Log File Directory	Default directory to store the log files
Log File Name	Default name of the log file
Log File Extension	Default extension for the log file
Maximum Log File Size (KB)	Allowed maximum size of log file
Maximum Number of Log Files	Allowed maximum number of log files

When reaching the maximum log file size, a new log file will be created. When reaching the maximum number of log files, the oldest one will be overwritten with the new information.

Filter Function

In order to filter relevant messages out of a number of logged activities of the Draco tera, the Syslog Monitoring offers various filter options.

In order to set and activate a filter, proceed as follows:

1. Set the desired filter option(s) by activating the respective checkbox(es).
2. Activate the filter settings by pressing the button **Filter**.
3. In order to deactivate an activated filter setting press the button **Clear**.

The following filter options are available:

Option	Description
Date	Messages of a defined date range will be filtered
Facility	Messages of a defined facility will be filtered
Severity	Messages of a defined severity will be filtered
Host	Messages of a defined host will be filtered
Message	Messages with defined text parts will be filtered

Filter options are not valid within the locally stored log files.

Recording Function

All messages shown in the Syslog are equipped with various recording functions.

➔ In order to store the messages shown in the Syslog (filtered or unfiltered), press the button **Save trace**. The messages will be stored in a .txt file.

➔ In order to remove the messages shown in the Syslog, press the button **Clear trace**.

➔ In order to stop recording the messages, press the button **Pause**. In order to continue press the button again.

3.10 SNMP

When using the SNMP function all function critical and safety critical parts of the matrix can be monitored and their status can be queried. This function complies with a RFC 1157 conformal standard.

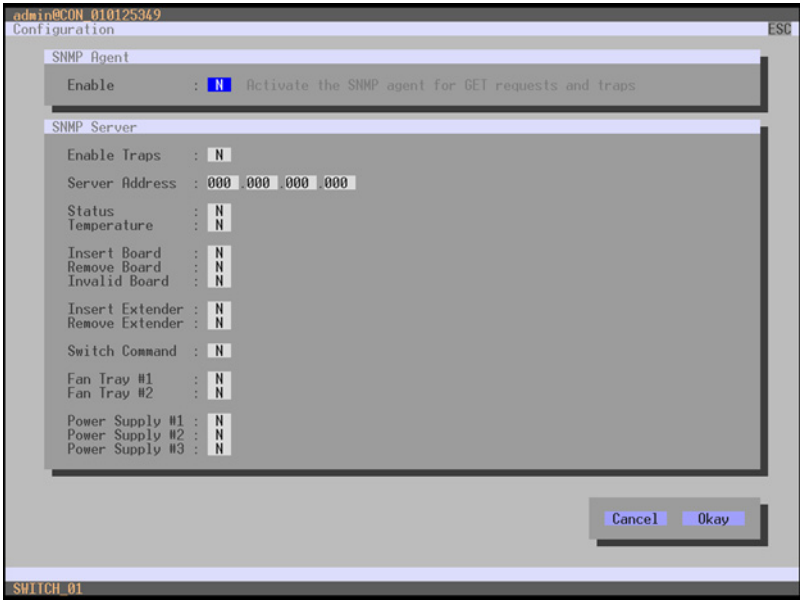
When using SNMP monitoring, a dedicated network for reasons of access security is strongly recommended.

You have the following possibilities to configure the SNMP monitoring:

OSD

In order to activate the SNMP agent, proceed as follows:

1. Select **Configuration > SNMP** in the main menu.



*Menu **Configuration – SNMP***

2. Set the option **Enable** to **Y** (Yes) under **SNMP Agent**. By activating this option, the permission for an active query of the SNMP agent is granted.

In order to configure a SNMP server, proceed as follows:

1. Select **Configuration > SNMP** in the main menu.
2. Set the option **Enable Traps** to **Y** (Yes) within **SNMP Server**. This function allows an active transmission of trap messages from the SNMP agent to the SNMP server.
3. Set the IP address of the SNMP server within **Server Address**.
4. Activate the requested traps by enabling them to **Y** (Yes).

You can select between the following traps:

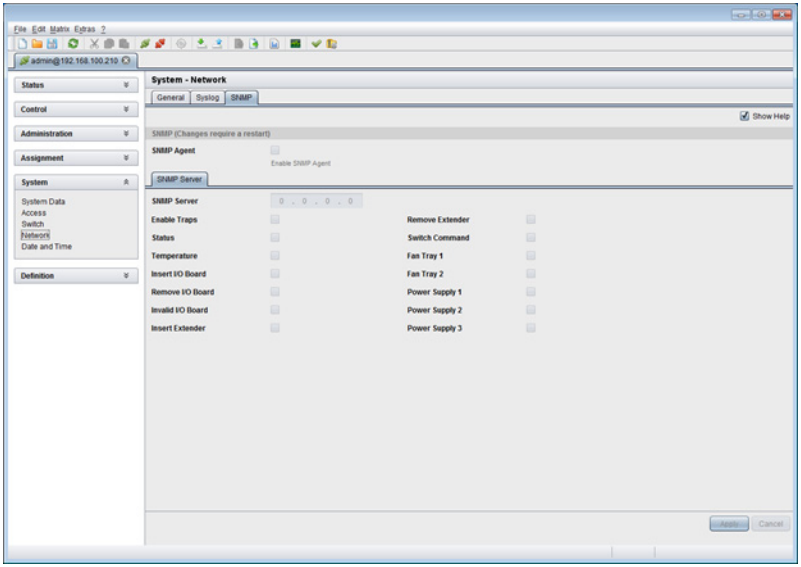
Trap	Description
Status	Notification about the matrix status
Temperature	Notification about the temperature within the matrix
Insert Board	Notification about the insertion of a new I/O board into a slot
Remove Board	Notification about the removal of an I/O board out of a slot
Invalid Board	Notification about a non-properly working I/O board
Insert Extender	Notification about a newly connected extender to the matrix, notification about a switched on extender, notification about a newly established link between extender and matrix
Remove Extender	Notification about a removed extender from the matrix, notification about a switched off extender, notification about an interrupted link between extender and matrix
Switch Command	Notification about a performed switching operation at the matrix
Fan Tray #1	Notification about the status of fan tray #1
Fan Tray #2	Notification about the status of fan tray #2
Power Supply #1	Notification about the status of power supply unit #1
Power Supply #2	Notification about the status of power supply unit #2
Power Supply #3	Notification about the status of power supply unit #3

For an activation of the SNMP agent function or the SNMP server function, a restart of the matrix is obligatory.

Java Tool

In order to activate the SNMP agent, proceed as follows:

1. Select **System > Network** in the task area.



*Menu **System – Network***

2. Activate the option **SNMP Agent** in the tab **SNMP**. By activating this option, the permission for an active query of the SNMP agent is granted.

In order to configure a SNMP-Server, proceed as follows:

1. Select **Configuration > Network** in the task area.
2. Activate the option **Enable Traps** within **SNMP Server**. This function allows an active transmission of trap messages from the SNMP agent to the SNMP server.
3. Set the IP address of the SNMP within **SNMP Server**.
4. Activate the requested traps.

For an activation of the SNMP agent function or the SNMP server function, a restart of the matrix is required.

3.11 System Check

The System Check offers a diagnostic function for checking your current matrix configuration. The purpose of this feature is to find suboptimal and faulty settings and to point these out.

The System Check is exclusively used for a plausibility check and does not make any active changes in the configuration.

You have the following possibility to access the menu:

The following configuration parts are checked:

- Matrix Firmware
- Extender Firmware
- Multi-Screen Control
- Ext Units
- CPU Devices
- CON Devices
- User
- System Configuration

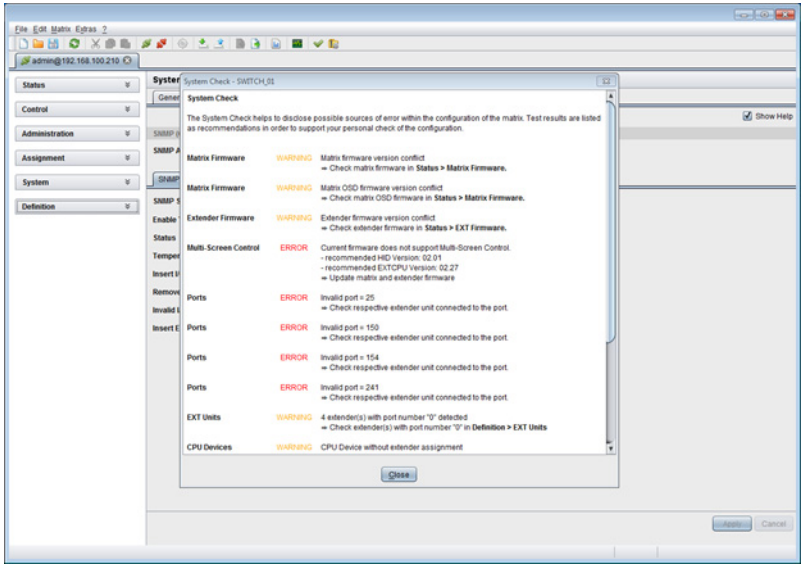
The following notification levels can be shown:

Level	Description
OK (green)	System Check completed without any abnormalities
WARNING (yellow)	System Check revealed abnormalities in the configuration that point out to incomplete parts of the configuration, firmware differences, duplications or not connected extenders but without being system critical
ERROR (red)	System Check revealed errors in the configuration that can have both functional and system critical influences on the system.

If the messages "WARNING" and "ERROR" are created by the System Check function, the respective problem will be described and a basic guideline will be provided.

In order to start System Check, proceed as follows:

➔ Select the symbol **System Check** in the symbol bar.


File Edit Matrix Extras ?
admin@192.168.100.210
Status
Control
Administration
Assignment
System
Definition
System Check - SWITCH_01
System Check
The System Check helps to disclose possible sources of error within the configuration of the matrix. Test results are listed as recommendations in order to support your personal check of the configuration.
Matrix Firmware WARNING Matrix firmware version conflict
⇒ Check matrix firmware in Status > Matrix Firmware.
Matrix Firmware WARNING Matrix OSD firmware version conflict
⇒ Check matrix OSD firmware in Status > Matrix Firmware.
Extender Firmware WARNING Extender firmware version conflict
⇒ Check extender firmware in Status > EXT Firmware.
Multi-Screen Control ERROR Current firmware does not support Multi-Screen Control.
- recommended HID Version: 02.01
- recommended EXTCPU Version: 02.27
⇒ Update matrix and extender firmware
Ports ERROR Invalid port = 25
⇒ Check respective extender unit connected to the port.
Ports ERROR Invalid port = 150
⇒ Check respective extender unit connected to the port.
Ports ERROR Invalid port = 154
⇒ Check respective extender unit connected to the port.
Ports ERROR Invalid port = 241
⇒ Check respective extender unit connected to the port.
EXT Units WARNING 4 extender(s) with port number "0" detected
⇒ Check extender(s) with port number "0" in Definition > EXT Units
CPU Devices WARNING CPU Device without extender assignment
Close
Show Help
Apply
Cancel

*Menu – **System Check***

4 Installation

4.1 Package Contents

Your package contains the following items:

- Draco tera matrix
- 1x power cord per built-in power supply unit
- 1x serial control cable
- Mounting accessories
- Quick Setup
- Java Tool
- 1x Cat X network cable (cross-wired)

If anything is missing, contact your dealer.

4.2 System Setup

First time users are recommended to setup the system in the same room as a test setup. This will allow you to identify and solve any cabling problems, and experiment with your system more conveniently.

Setup of the matrix

1. Install the CPU and I/O boards.
2. Connect keyboard, mouse and monitor to the CPU board of the matrix.
3. Connect the matrix to the power supply.
4. Open OSD via 'Hot Key' and login with administrator rights in the main menu under **configuration** (see Chapter 5.2.1, Page 55).
5. Configure initially as requested.

After the configuration of the system it is recommended to save the configuration by selecting **Configuration > Save** and restart the matrix by selecting **Restart Matrix**.

6. Optional: Establish a network connection between the matrix and the Java tool in order to set an extended configuration (see Chapter 5.2.2, Page 60).

Setup of Extender

1. Connect the CON units to the matrix by using the interconnect cables (Cat X or fiber).
2. Connect the CON units to the input devices that has to be used (for example keyboard and mouse).
3. Connect the 5VDC power supply units to the CON units.
4. Check the basic function of the CON unit by opening the OSD via 'Hot Key'.
5. Connect the source (computer, CPU) to the CPU unit of the extender by using the provided connection cables.
6. Connect the CPU unit to the matrix by using the interconnect cables (Cat X or fiber).
7. If you have a video matrix, connect the video source directly to the matrix by using the interconnect cables (coax, fiber).
8. Connect the 5VDC power supply units to the CPU units.
9. Start the system.

4.3 Example Applications

The Draco tera supports a most flexible configuration of your system environment:

A part of the Draco tera can be configured as a Single-Head work station, a part as Dual-Head, as Quad-Head or even as a video matrix for example. In addition to that there are configurations with KVM and USB 2.0 available.

Among the access via OSD by the keyboard connected to the CPU board or an extender CON unit, you have the following additional access options:

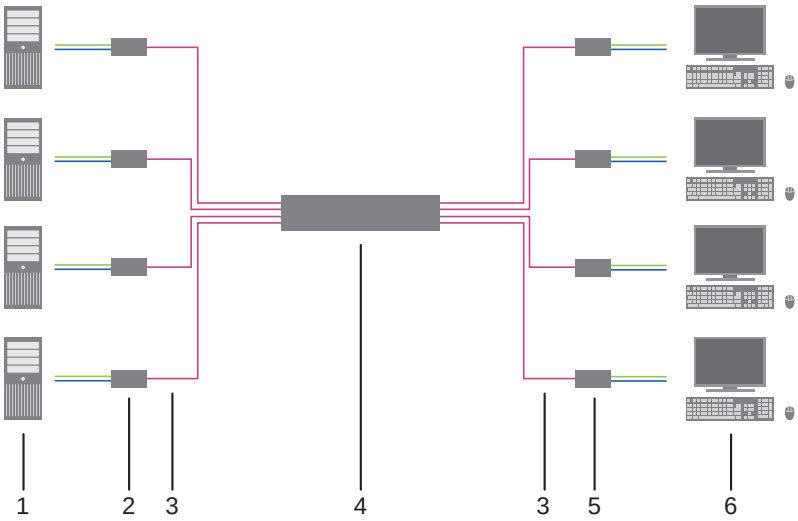
- via Java Tool
- via serial interface

A connection to common media controls is possible, too.

The following part shows typical exemplary installations of the Draco tera:

4.3.1 KVM Matrix

In Single-Head mode, up to 288 ports can be used either as an input or as an output port depending on components and equipment. At the same time there is a non blocking access for all users, i.e. user access is not limited by the activities of another user.



Single-Head KVM Matrix

1 Source (computer, CPU)

2 CPU unit

3 Interconnect cable

4 Draco tera matrix

5 CON unit

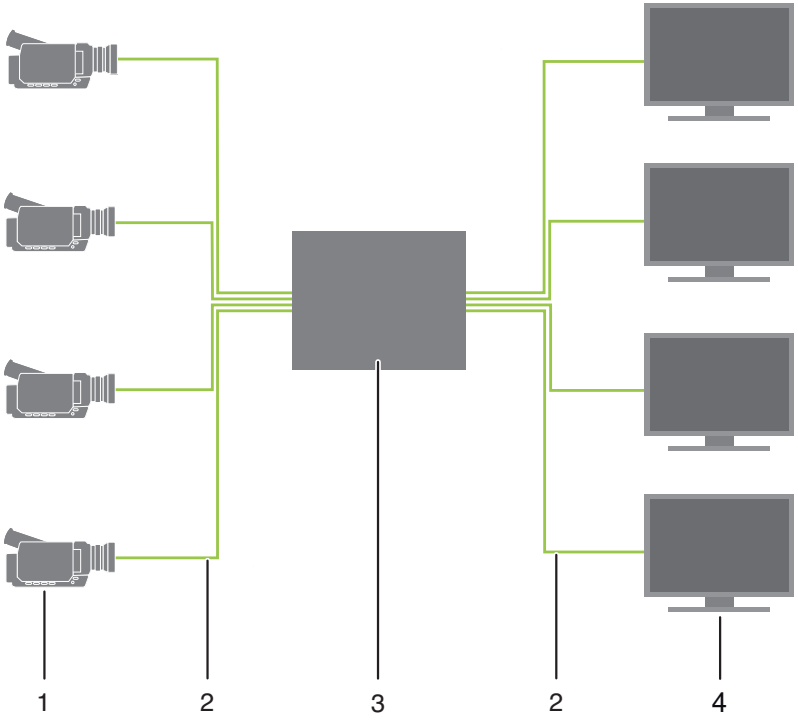
6 Console (monitor, keyboard, mouse)

If you have a Single-Head console, you can also get access to a Dual-Head or Quad-Head CPU for example. However control is only possible at monitor 1.

Any signal source can be switched to any number of monitors that will show the video signal at the same time. In addition to that even (optional) audio can be switched.

4.3.2 Video Matrix

If you use the Draco tera as a video matrix, up to 288 input ports can be switched to up to 288 output ports depending on components and equipment.



Video Matrix

1 Video source (e. g. SDI camera)

2 Interconnect cable

3 Draco tera matrix

4 Video sink (e. g. monitor)

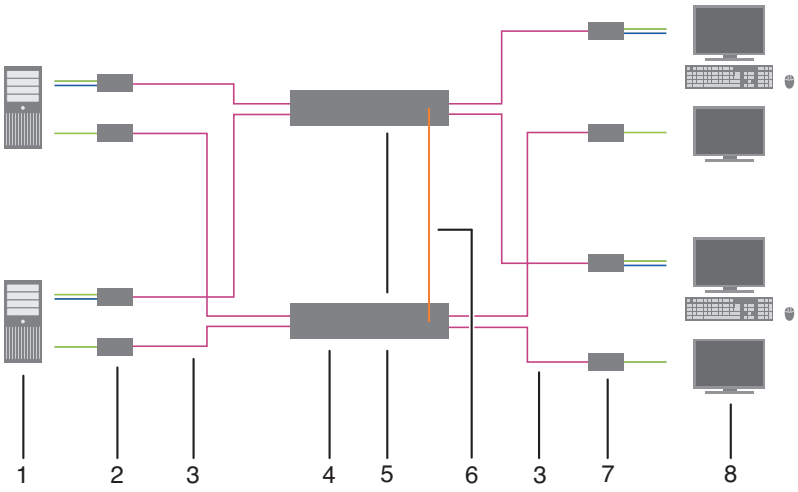
4.3.3 Parallel Operation (Stacking)

If you have special configurations, especially at installations with several monitors per work station or additional support of USB 2.0 transmission paths, the number of connectable CPUs and consoles can be increased by a parallel operation (stacking) of several Draco tera devices.

One of the Draco tera matrices has to be defined as the **master matrix**, all the others have to be configured as **slave matrix** and the IP address of the master matrix has to be entered in the field **Master IP Address** (see Chapter 5.4.1, Page 75). They have to be connected to the master matrix via network connector (RJ45) of the CPU board. The option **Enable LAN Echo** has to be activated at the master matrix (see Chapter 5.4.1, Page 75).

If a switching command is done in the OSD, the slave matrices will also switch automatically.

Switching of stacked devices might be delayed by several seconds.



Parallel Operation (Stacking)

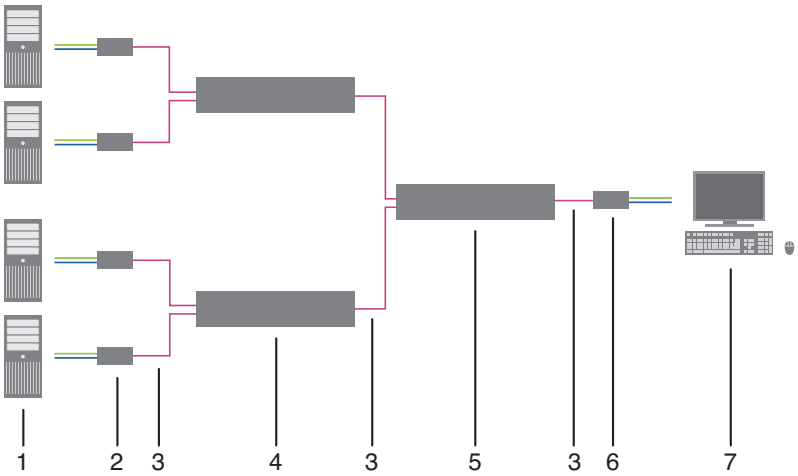
1 Dual-Head source (computer, CPU)
2 CPU unit
3 Interconnect cable
4 Draco tera matrix (master matrix)
5 Draco tera matrix (slave matrix)
6 Network connection master / slave(s)
7 CON unit
8 Console (2x monitor, keyboard, mouse)

4.3.4 Cascading

For applications exceeding the number of available ports, the system can be extended by cascading.

In this case, the Draco tera devices are connected by so-called "tie lines". The tie lines are dynamically configured to support connections in both directions.

To access cascaded matrices from a console, one of the matrices has to be configured as **sub matrix** (see Chapter 5.4.1, Page 75).



Cascading

1 Source (computer, CPU)

2 CPU unit

3 Interconnect cable

4 Draco tera (sub matrix)

5 Draco tera (main matrix)

6 CON unit

7 Console (monitor, keyboard, mouse)

5 Configuration

5.1 Command Mode

The Draco tera has a Command Mode that allows several functions via keyboard command during normal use.

To enter Command Mode use a 'Hot Key' sequence and to exit Command Mode, press <Esc>. While in Command Mode, the LEDs **Shift** and **Scroll** on the console keyboard will flash.

In Command Mode normal keyboard and mouse operation will cease. Only selected keyboard commands are available.
If there is no keyboard command executed within 10 s after activating Command Mode, it will automatically be deactivated.

The following table lists the keyboard commands to enter and to exit Command Mode and to change the 'Hot Key' sequence:

Function	Keyboard Command
Enter Command Mode (default)	2x <Left Shift> (or 'Hot Key')
Exit Command Mode	<Esc>
Change 'Hot Key' sequence	<current 'Hot Key'>, <c>, <new 'Hot Key' code>, <Enter> Until 2011-30-09: <Left Ctrl> + <Left Shift> + <c>, <'Hot Key' Code>, <Enter>

<Key> + <Key>	Press keys simultaneously
<Key>, <Key>	Press keys successively
2x <Key>	Press key quickly, twice in a row (similar to a mouse double-click)

The 'Hot Key' sequence to enter Command Mode can be changed. The following table lists the 'Hot Key' Codes for the available key sequences:

'Hot Key' Code	'Hot Key'
0	Freely selectable (from 2012-01-12 on)
2	2x <Scroll>
3	2x <Left Shift>
4	2x <Left Ctrl>
5	2x <Left Alt>
6	2x <Right Shift>
7	2x <Right Ctrl>
8	2x <Right Alt>

In a combined KVM matrix / U-Switch configuration, choose different 'Hot Keys' for the KVM matrix and the U-Switch.

Set freely selectable 'Hot Key' (exemplary)

In order to set a freely selectable 'Hot Key' (e.g. 2x <Space>), use the following keyboard sequence:

<current 'Hot Key'>, <c>, <0>, <Space>, <Enter>

Set 'Hot Key' for direct OSD Access

When setting a second 'Hot Key', next to the 'Hot Key' for standard functions, this 'Hot Key' can be exclusively used for opening the OSD directly.

In order to select a 'Hot Key' from the 'Hot Key' table for opening OSD directly, use the following keyboard sequence:

<current 'Hot Key'>, <f>, <'Hot Key' code>, <Enter>

In order to select a freely selectable 'Hot Key' (e.g. 2x <Space>) for opening OSD directly, use the following keyboard sequence:

<current 'Hot Key'>, <f>, <0>, <Space>, <Enter>

Reset 'Hot Key'

In order to set a 'Hot Key' back to default settings of the extender, press the key combination <Right Shift> + <Del> within 5 s after switching on the CON unit or plugging in a keyboard.

5.2 Control Options

The Draco tera contains an internal CPU that allows you to control all functions from any console without the need for an external CPU or media control.

You have the following possibilities to access the Draco tera for configuration and operation:

- via OSD
- via Java Tool
- via serial interface

5.2.1 Control via OSD

Via OSD (On-Screen-Display) you set the configuration of the Draco tera operating system. The settings of the menu **Configuration** are described below. All other menus are described in later chapters.

You have the following possibilities to enter the OSD of the Draco tera:

- via keyboard connected to the CPU board
- via keyboard connected to a CON unit of an extender

Entering OSD

1. Start Command Mode with the 'Hot Key' (see Chapter 5.1, Page 53).
2. Press <o> to open OSD.

   You will see a list of all available CPUs as a start menu.
3. Press <Esc> to enter the main menu.

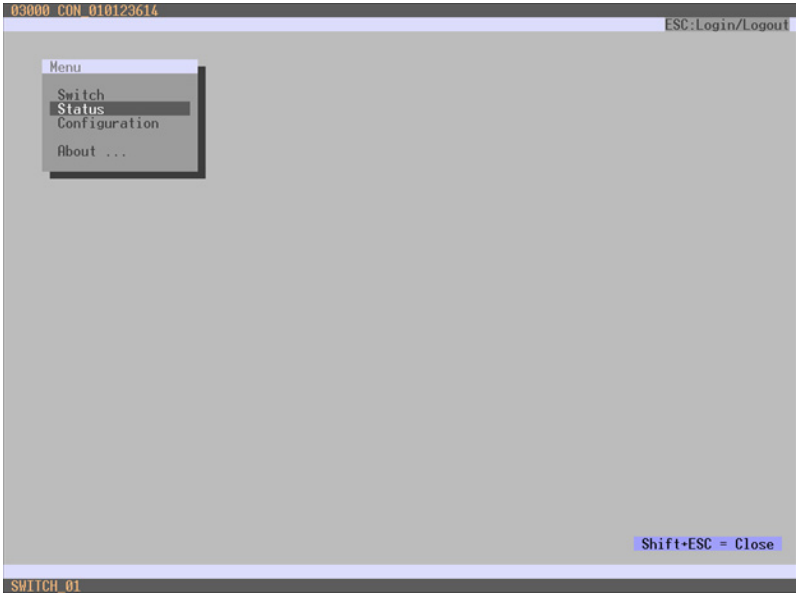
If the option **Enable CPU Selection** is activated in the menu **Configuration**, first of all the selection list for switching CPU devices will be opened. This list can be skipped by pressing the key <F7>.

Leaving OSD

➔ Press the key <Esc> in the main menu or simultaneously <Left Shift> + <Esc> anywhere within the OSD.

The OSD will be closed without any further changes and the currently active CPU connection will be displayed.

Menu Structure



Example View

The general layout of the OSD is structured into three areas:

- Upper status area (topmost two text lines)
- Working area
- Lower status area (lowest two text lines)

Keyboard control

You can select between the following keyboard commands:

Function	Keyboard Command
Left cursor - only within an input field or a switching screen	<Cursor Left>
Right Cursor - only within an input field or a switching screen	<Cursor Right>
• In input fields: Line up (with wrap around) • In menus: Line up (without wrap around)	<Cursor Up>
• In input fields: Line down (with wrap around) • In menus: Line down (without wrap around)	<Cursor Down>
Previous page in menus with more than one page	<Page Up>
Next page in menus with more than one page	<Page Down>
Next input field	<Tab>
Previous input field	<Left Shift> + <Tab>
Next option in selection fields	<+>
Previous option in selection fields	<->
Switching in selection fields between two conditions, e. g. between **ON** / **OFF** or **Y** (Yes) / **N** (No)	<Space>
• In menus with input fields: Save data • In menus: Select menu item	<Enter>
• In menus with input fields: Cancel data input without saving • In menus with selection fields: Go back to the superior menu	<Esc>

Sorting Function

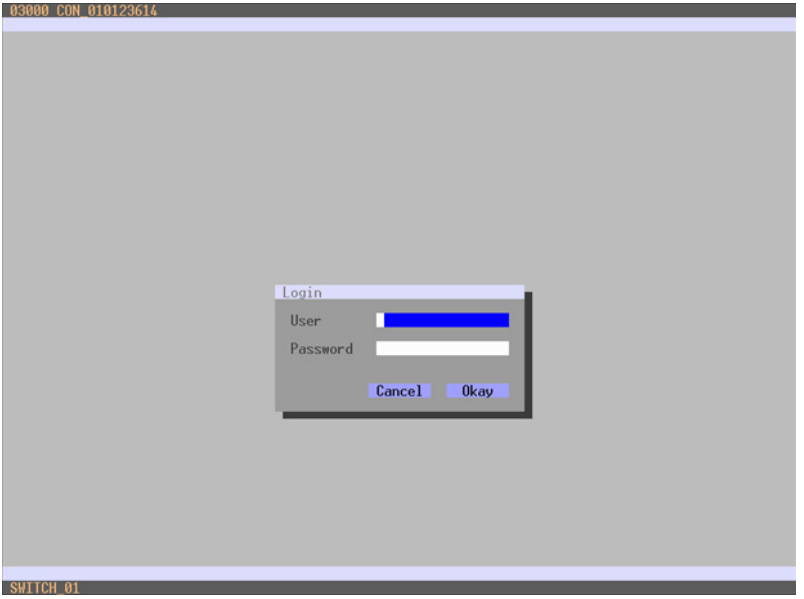
Lists and tables in the Java Tool offer a sorting function for fast and smooth search.

You have the possibility to use the following sorting functions:

Function	Keyboard Command
Sort ID numbers in a descending order or in an ascending order by pressing the keyboard command twice (**ID**).	<F1>
Sort ID names in a descending order or in an ascending order by pressing the keyboard command twice (**Name**).	<F2>
Go to the next result in the list of results of the search field (**Next**).	<F3>
Go to the previous result in the list of results of the search field (**Previous**).	<F4>
Refresh the currently shown list (**Refresh**).	<F5>
Jump between the search field and the list of results (**Find**).	<F6>

Password request

You have to login with administrator rights to be able to set configurations.



*Menu **Login***

Access to the configuration menu requires administrator rights. User login is mandatory.

Field	Input
User	admin
Password	admin

By pressing the key <F10> in the main menu of the OSD, the login mask will be opened. In order to log out a user, press the key <F10> again.

For security reasons, please change the administrator password as soon as possible (see Chapter 5.4.1, Page 75).

5.2.2 Control via Java Tool

Requirements

If you want to use the Java Tool, the following requirements have to be fulfilled:

- Computer with an executable Java Tool and an installed Java Runtime Environment (JRE, version 1.6 or higher)
- Java Tool software
- Available network connection between the Java Tool and the matrix

Contact your system administrator concerning JRE and network connection.

Installation of the Java Tool

The Java Tool is available as a single executable program file that does not require a separate installation.

➔ Copy the tool after receiving the file to a directory on your computer.

If you do not have a Java Tool, contact your dealer.

Computer Connection to the Matrix

For a direct connection between computer and matrix, a cross-wired network cable is required.
For a connection between computer and matrix via switch or hub, a parallel assembled network cable is required.
Do not use a network connection between Java Toll and the matrix that is primarily used for transmitting audio data.

➔ Connect the network cable to the RJ45 ports of computer and CPU board of the matrix.

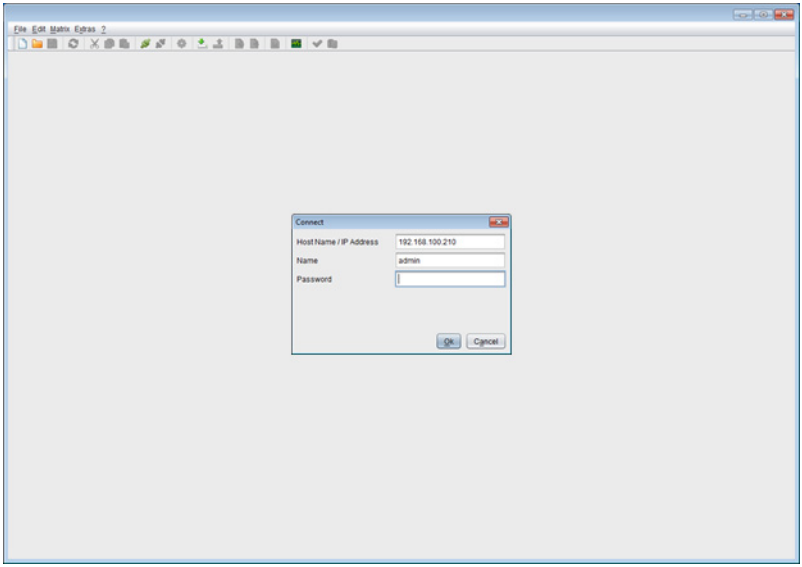
Start of the Java Tool

➔ Open the Java Tool by a double click on the program icon or use the <Enter> key of the keyboard.

Connection to the Matrix

At least FTP rights are required.

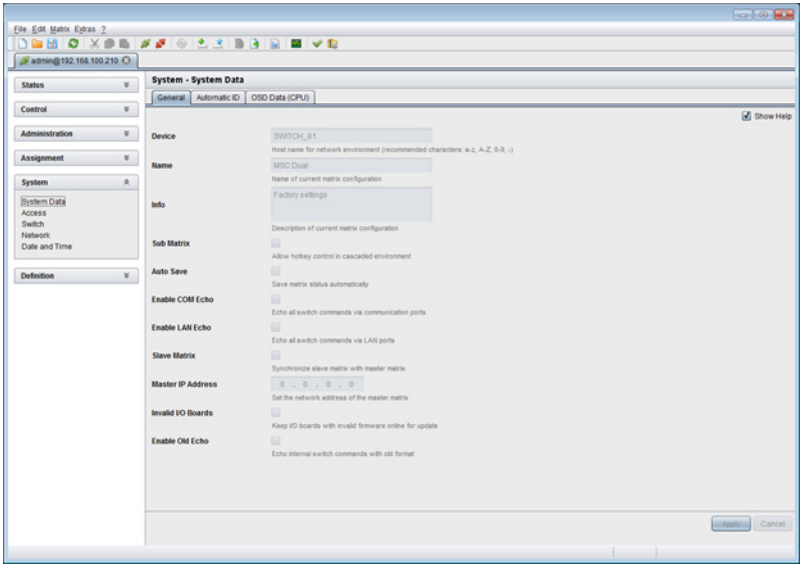
1. Open the Java Tool.
2. Select **Matrix > Connect** in the menu bar.
3. Enter the IP address in the popup input field according to the network configuration of the Draco tera (see Chapter 5.2.3, Page 69).
4. Enter the user name and password for the Draco tera (see Chapter 5.4.1, Page 75).
5. Confirm your inputs with the button **OK** or reject with **Cancel**.



*Menu **Connect***

Up to twelve connections between the matrix and the Java tool can be established at the same time due to a limitation of available sockets.

Menu structure



*Example View (**System – System Data**)*

The menu structure of the Java Tools is subdivided into various sections:

- Menu bar (top line)
- Toolbar (second line)
- Tab bar (third line)
- Task area (left menu section)
- Working area (right menu section)
- Status bar (bottom line section)

Operating Instructions

The operation of the Java Tool is intuitive and corresponds to the user interface of common operating systems.

The Java Tool contains its own support function.

The integrated help texts in the working area of the Java Tool can be activated or deactivated by the checkbox in the upper right corner.

Mouse Control

You can select between the following mouse commands:

Function	Mouse Command
Menu selection, marking	Left mouse button
Open function specific selection menus	Double click left mouse button
Open context specific selection menus	Right mouse button

Keyboard Control

You can select between the following keyboard commands:

Function	Keyboard Command
Cursor to the left	<Cursor Left>
Cursor to the right	<Cursor Right>
Line up	<Cursor Up>
Line down	<Cursor Down>
Previous page in input or status menus with more than one page	<Page Up>
Next page in input or status menus with more than one page	<Page Down>
Next field in input menus	<Tab>
Previous field in input menus	<Left Shift> + <Tab>
• Switching in selection fields between two conditions (checkmark or not). • Open already marked fields with editing or selecting possibility.	<Space>
• In menus: Data saving • Menu item selection	<Enter>
• Leave tables • Jump from tables into the next field	<Ctrl> + <Tab>
• Leave tables • Jump from tables into the previous field	<Ctrl> + <Left Shift> + <Tab>

Various functions within the menus in the menu bar can be executed with the provided keyboard commands (e. g. press <Ctrl> + <S> to execute **Save**) that are listed to the right of the respective menu item.

Reload Options

The information shown in the Java Tool can be reloaded in different ways.

- Via <F5> key on the used keyboard
- Via **Edit > Reload** in the menu bar
- Via "Reload"-Symbol in the symbol bar

Context Function

The Java Tool offers several context functions that support a user friendly and effective operation of the tool. The context functions are described in the respective chapters.

➔ In order to execute a context function, use the right mouse button on the corresponding field and select the desired function.

Sorting Function

Lists and tables in the Java Tool offer a sorting function for fast and smooth search.

1. For ascending sort status, use the left mouse button once to click into the header of the column to be sorted.

   The sort status is indicated by an arrow that points upwards.
2. For descending sort, use the left mouse button twice to click on the header of the column that has to be sorted. The sort is displayed by an arrow that points downwards.
3. In order to cancel the sort, use the left mouse button once or twice to click on the header of the column that is sorted until the displayed arrow will disappear.

Filter Function

Lists and tables in the Java Tool offer a filter function that allows a fast and smooth search inside.

1. In order to activate a filter, use the right mouse button to click on the header of the column that has to be filtered and select **Set Filter**.
2. Write directly the word or part of a word that has to be filtered into the header.

   The filter results are shown immediately.
3. In order to delete a filter, use the right mouse button to click on the header of the column that has to be filtered and select **Clear Filter**.

An active filter is indicated by an asterix in the header.
The filter function is based on the functional principle of common web search engines.

Offline Configuration

Configuration and system settings via Java Tool can be changed in offline mode without a direct connection between matrix and Java Tool.

In order to activate a configuration in the matrix, proceed as follows:

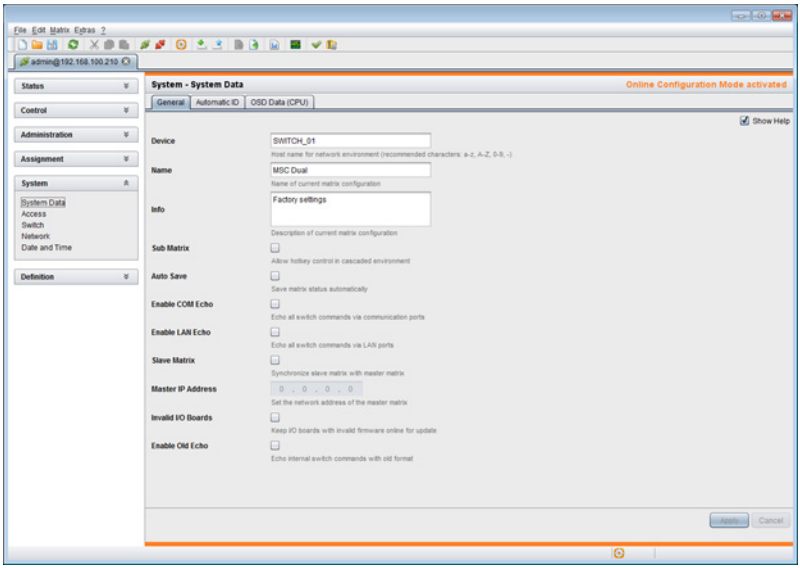
1. Select **File > Upload** in the menu bar.
2. Enter the IP address of the matrix (see Chapter 5.2.3, Page 69) and the name and password of the user authorization and select the storage location of the new configuration (**default** or **config01-08**) in the menu **Select Configuration**.
3. Select **Matrix > Connect** in the menu bar and enter the IP address of the matrix and the name and password for user authorization.
4. Select **Administration > Activate Configuration** in the task area and select the storage location that has been selected above.
5. Use the button **Activate** to open the selected configuration within the matrix.

   The connection and the open tab will be closed and the matrix will be restarted.

During the activation of a configuration, the matrix is temporarily not available.

Online Configuration

Configurations and system settings can be also edited via Java tool in online mode with an active connection between matrix and Java tool.



*Menu **System – System Data***

In order to edit a configuration in online mode, proceed as follows:

1. Select the menu item **Matrix > Activate Online Configuration Mode**. This setting will be additionally shown in the lower part of the working area.
2. Make any edits at the configuration and system settings and confirm them by pressing the button **Apply**. The changes will be immediately applied.
3. In order to deactivate the online mode, select the menu item **Matrix > Deactivate Online Configuration Mode** in the menu bar.

Options menu

The use of the Java tool can be adapted and customised by editing various default settings.

In order to activate or change the default settings , proceed as follows:

➔ Select **Extras > Options** in the menu bar. The tab **Default Settings** will open.

The following default settings parameters can be done:

Option	Description
IP / Hostname	Default IP address of the matrix required for connection
User	Default user name required for connection
Configuration Directory	Default directory for configuration files
Firmware Directory	Default directory for update files
Status Directory	Default directory for the firmware status
Import / Export Directory	Default directory for import and export files
Presets Directory	Default directory for macro files

In order to set various font sizes for the Java tool, proceed as follows:

1. Select **Extras > Options** in the menu bar.
2. Open the tab **Font**.
3. Select the desired font size (**normal** or **large**).

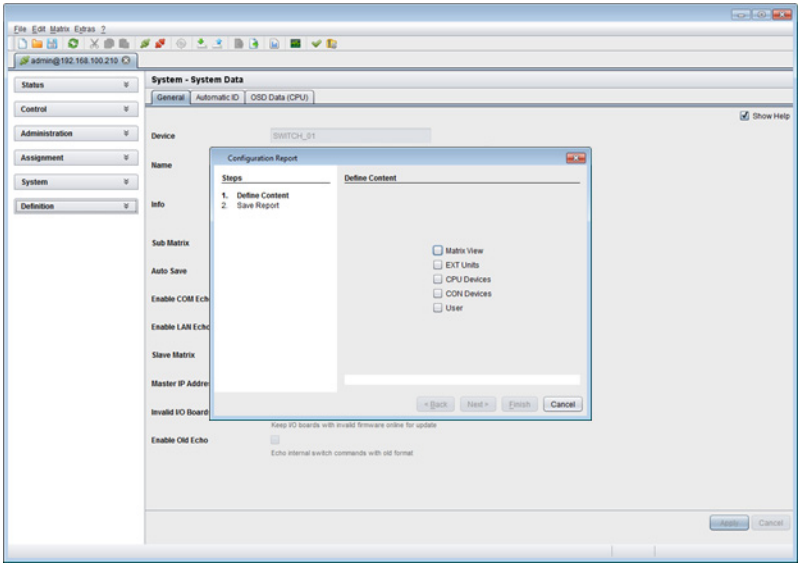
Report

The Java tool is equipped with a report function that shows the current switching status and all relevant parts of the matrix configuration in a PDF file.

In order to create a report, proceed as follows:

1. Select **File > Report...** in the menu bar. A selection assistant will be opened.
2. Select those contents that should be included in the report (**Matrix View**, **EXT Units**, **CPU Devices**, **CON Devices** and **Users**) and confirm with the button **Next >**.
3. Select the preferred location for storage of the report and confirm with the button **Finish**.

   The report will be created as a PDF file.



*Menu **File > Report***

The report function can be used in both online or offline mode of the Java tool.

5.2.3 Control via Serial Interface

The Draco tera operating system offers various functions for an operation via serial interface. There are telegrams for Switching single or all connections available, both unidirectional and bidirectional. In addition to that, there are telegrams for an overall definition of the total switching status and for saving and loading such switching states.

By request, the Draco tera optionally provides an echo of all effected switching operations via serial interface or network interface. That is why you have the possibility to track the current configurations of the matrix at any time and so update your own applications.

As an additional application you can switch parallely Draco tera clones as slaves (**Stacking**) via serial network interface.

5.3 Assignment

The Draco tera offers the possibility of a console specific or a CPU specific assignment.

- The first possibility is to assign virtual CPUs to real CPUs.
- The second possibility is to assign real consoles to virtual consoles.

5.3.1 Virtual CPU

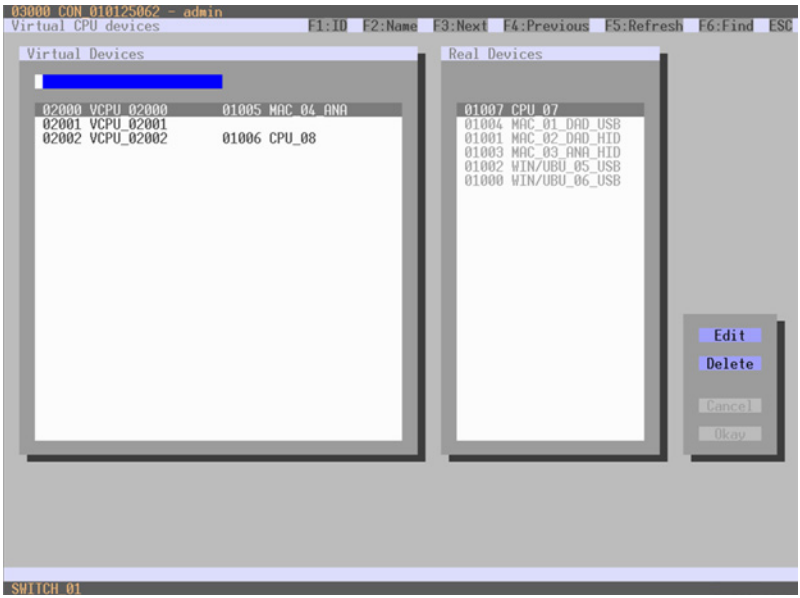
You can assign virtual to real CPUs in this menu.

With this function the effort for switching several consoles to the same CPU can be reduced. If there a several consoles connected to a virtual CPU that is assigned to a real CPU, you will only have to change the real CPU once and all consoles will receive the video signal of the new CPU.

You have the following possibilities to access the menu:

OSD

➔ Select **Assignments > Virtual CPU Devices** in the main menu.



*Menu **Assignments – Virtual CPU Devices***

For an assignment, proceed as follows:

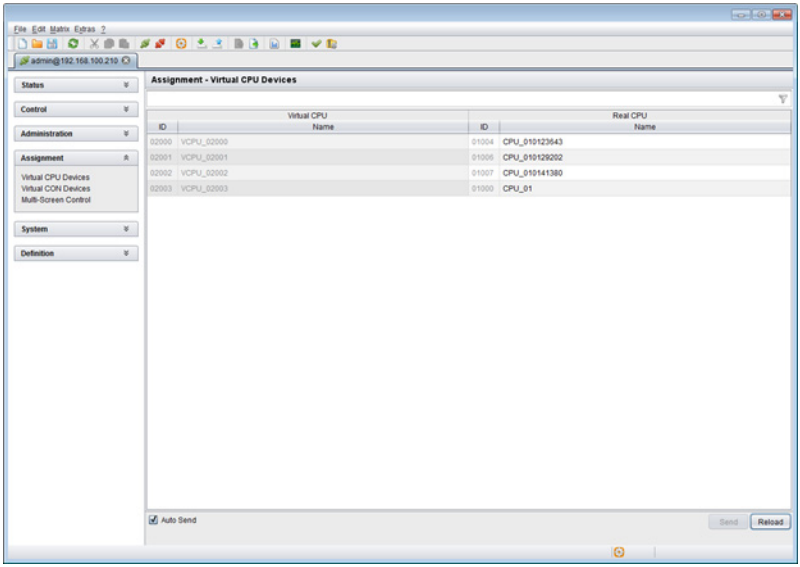
1. Select the virtual CPU in the list **Virtual Devices** that has to be assigned to a real CPU.
2. Press the button **Edit**.
3. Select the CPU in the list **Real Devices** that has to be assigned to the selected virtual CPU.
4. Press the button **Okay** to confirm the assignment.

   The assignment will be done.

Only one virtual CPU can be assigned to a real CPU.

Java Tool

➔ Select **Assignment > Virtual CPU Devices** in the task area.



*Menu **Assignment – Virtual CPU Devices***

For an assignment, proceed as follows:

1. Select a virtual CPU in the list **Virtual CPU**.
2. Double click in the column **Real CPU** to get a list of all available real CPUs.
3. Select a real CPU.

You can select between the following buttons:

Button	Function
Send	Send assignments to the matrix
Reload	Reload changes

When activating the function **Auto Send** in the left lower corner of the working area, switching operations will be done immediately without confirmation by pressing the button **Send**.

The selection boxes in the column **Real CPU** contain a filter function for an easy selection of single consoles from a larger pool of consoles (see Chapter 5.2.2, Page 60).

The Java tool additionally offers the possibility to go directly from the menu **Assignment** to the menu **Definition** to check specific settings for the respective console or CPU.

➔ Use the right mouse button to select the respective console or CPU and select **Open CON Device** or **Open CPU Device**.

5.3.2 Virtual Console

You can assign real consoles to virtual consoles in this menu.

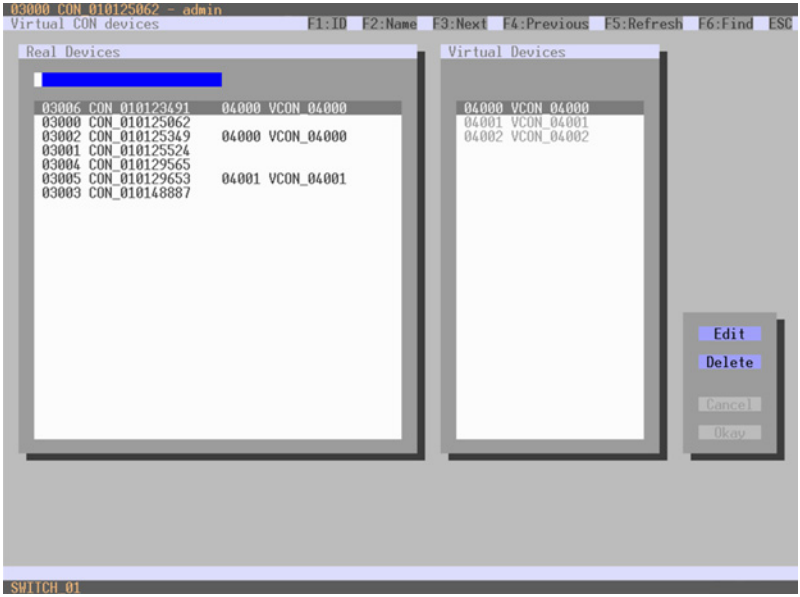
With this function the effort to set and change access permissions can be reduced by changing the permissions of the virtual console and so applying them to all assigned real consoles, too.

Virtual consoles can be switched exactly in the same way as real consoles. If a virtual console is switched to a CPU, all real consoles that are assigned to the virtual console will receive the video signal. The real console that is lastly scheduled in the list of assignments will additionally receive keyboard and mouse control.

You have the following possibilities to access the menu:

OSD

➔ Select **Assignments > Virtual CON Devices** in the main menu.



*Menu **Assignments – Virtual CON Devices***

For an assignment, proceed as follows:

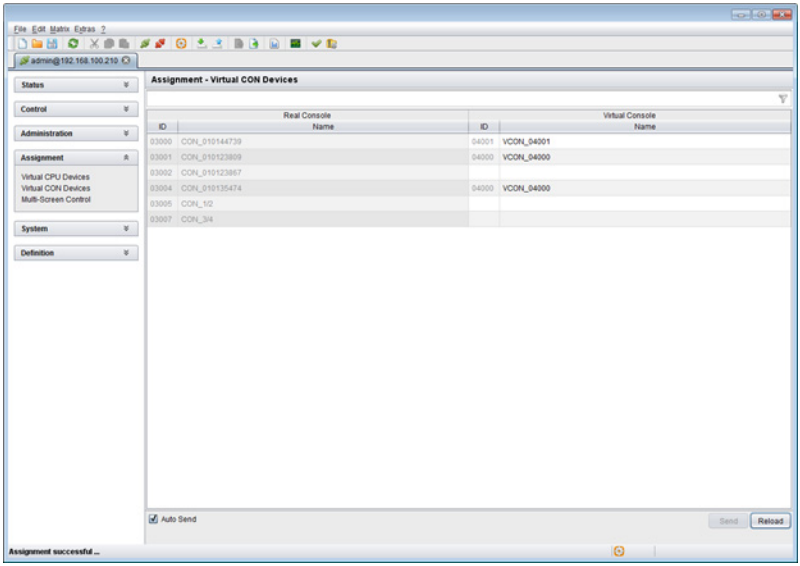
1. Select the real console in the list **Real Devices** that has to be assigned to a virtual CPU.
2. Press the button **Edit**.
3. Select the virtual console in the list **Virtual Devices** that has to be assigned to the selected real console.
4. Press the button **Okay** to confirm the assignment.

   The assignment will be done.

A virtual console can be assigned to more than one real consoles.

Java Tool

➔ Select **Assignment > Virtual CON Devices** in the task area.



*Menu **Assignment – Virtual CON Devices***

In order to place an assignment, proceed as follows:

1. Select the required real console in the table **Real Console**.
2. Double click in the column **Virtual Console** to get a list of all available virtual consoles.
3. Select the required virtual console.

You can select between the following buttons:

Button	Function
Send	Send assignments to the matrix
Cancel	Reject changes

When activating the function **Auto Send** in the left lower corner of the working area, switching operations will be done immediately without confirmation by pressing the button **Send**.

The selection boxes in the column **Virtual Console** contain a filter function for an easy selection of a single CPU from a larger pool of CPUs (see Chapter 5.2.2, Page 60).

5.4 System Settings

You have the possibility to configure the following system settings at the Draco tera.

The configuration of the system settings can only be done by users with administrator rights.

5.4.1 System Data

The system configuration is set in this menu.

You have the following possibilities to access the menu:

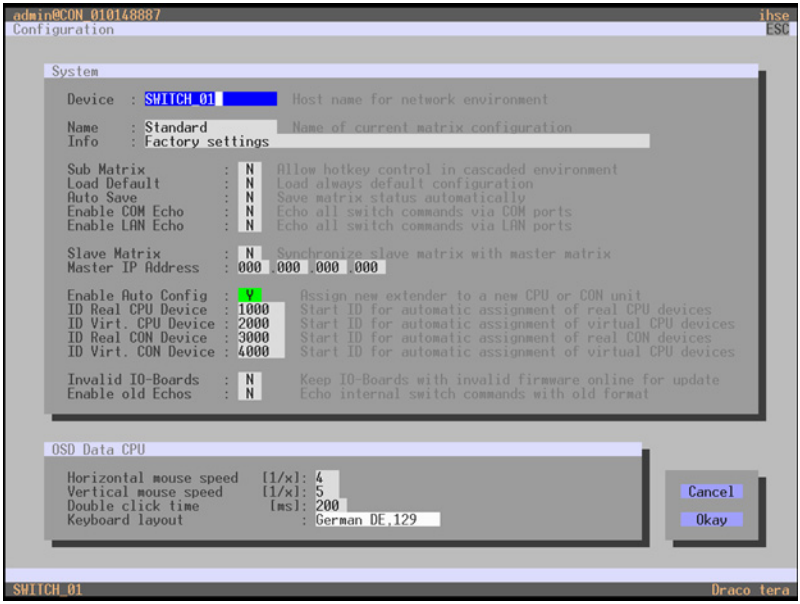
You can select between the following settings:

Field	Selection	Description
Device	Text	Enter the device name of the matrix (default: SWITCH_01)
Name	Text	Enter the name of the configuration that is used to save the current settings (default: Standard)
Info	Text	Additional text field to describe the configuration (default: Factory settings)
Sub Matrix	activated	If the matrix is defined as a sub matrix in the OSD, the user will loose control automatically. Control can be recovered by using the keyboard command <Shift>, <Shift>, <s>, <o>. The OSD now will be opened again in the matrix that has been defined as sub matrix.
	deactivated	Function not active (default)
Load Default	activated	Starting the matrix after a restart or a switch-on with the default configuration.
	deactivated	Starting the matrix after a restart or a switch-on with the last saved configuration (default).

Field	Selection	Description
Auto Save	activated	Save the current configuration of the matrix in the flash memory periodically. **Note:** During saving of the configuration, the matrix will not be operational. Saving takes place every 600 seconds, as long as changes of the configuration or switching operations have been executed in the meantime.
	deactivated	Function not active (default)
Enable COM Echo	activated	Send all performed switching commands in the matrix as an echo via serial interface. **Note:** This function should be enabled when using a media control via serial interface.
	deactivated	Function not active (default)
Enable LAN Echo	activated	Send all performed switching commands in the matrix as an echo via LAN connection. **Note:** This function should be enabled when using a media control via LAN connection or when using stacking with two ore more matrices.
	deactivated	Function not active (default)
Slave Matrix	activated	Synchronize the slave matrix according to the switch status of the master matrix.
	deactivated	Function not active (default)
Master IP Address	Numerical value	Set the network address of the master matrix (default value: 000.000.000.000)
Ivalid IO-Boards	activated	Keep I/O boards with wrong or invalid firmware online in the matrix.
	deactivated	Shut down I/O boards with wrong or invalid firmware automatically (default).
Hor. Mouse Speed 1/x	1-9	Adjustment of the horizontal mouse speed, 1 = slow, 9 = fast (default value: 4)
Ver. Mouse Speed 1/x	1-9	Adjustment of the vertical mouse speed, 1 = slow, 9 = fast (default value: 5)
Double Click Time	100-800	Adjustment of the time slot for a double click (default value: 200 ms)
Keyboard layout	Region	Set the OSD keyboard layout according to the used keyboard (default: German (DE))

OSD

➔ Select **Configuration > System** in the main menu.

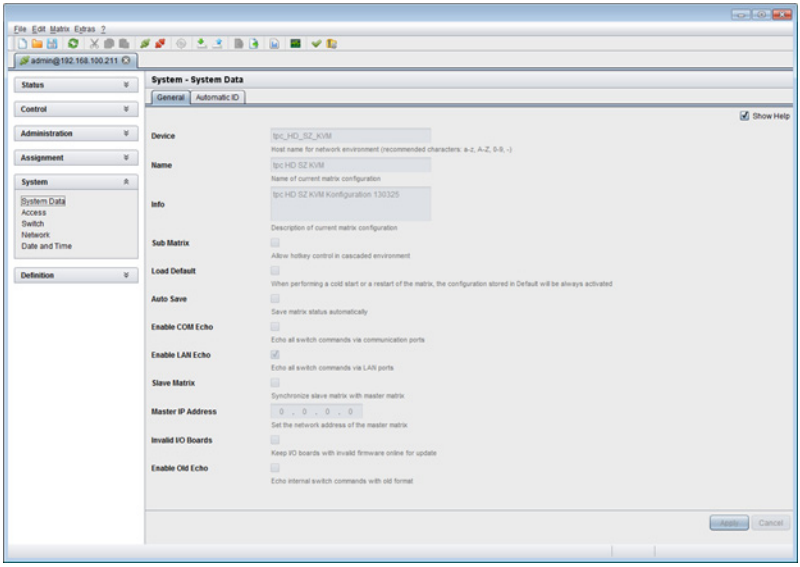

admin@CON_010148887
ihse
Configuration
ESC
System
Device : SWITCH_01
Host name for network environment
Name : Standard
Info : Factory settings
Name of current matrix configuration
Sub Matrix : N
Allow hotkey control in cascaded environment
Load Default : N
Load always default configuration
Auto Save : N
Save matrix status automatically
Enable COM Echo : N
Echo all switch commands via COM ports
Enable LAN Echo : N
Echo all switch commands via LAN ports
Slave Matrix : N
Synchronize slave matrix with master matrix
Master IP Address : 000 .000 .000 .000
Enable Auto Config : Y
Assign new extender to a new CPU or CON unit
ID Real CPU Device : 1000
Start ID for automatic assignment of real CPU devices
ID Virt. CPU Device : 2000
Start ID for automatic assignment of virtual CPU devices
ID Real CON Device : 3000
Start ID for automatic assignment of real CON devices
ID Virt. CON Device : 4000
Start ID for automatic assignment of virtual CPU devices
Invalid IO-Boards : N
Keep IO-Boards with invalid firmware online for update
Enable old Echos : N
Echo internal switch commands with old format
OSD Data CPU
Horizontal mouse speed [1/x]: 4
Vertical mouse speed [1/x]: 5
Double click time [ms]: 200
Keyboard layout : German DE,129
Cancel
Okay
SWITCH_01
Draco tera

*Menu **Configuration – System***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool



*Menu **System – System Data***

5.4.2 Automatic ID

The settings for the automatic creation of CPU and CON devices by connecting a new extender unit are made in this menu.

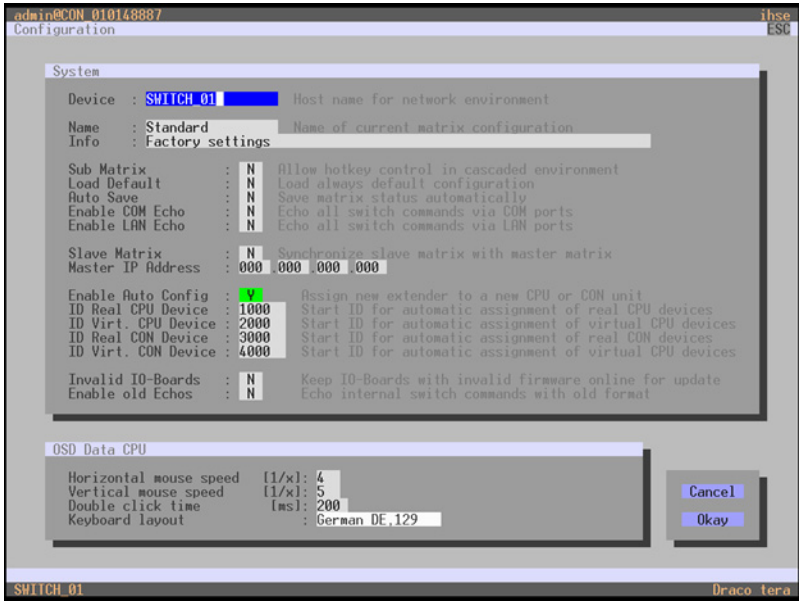
You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
Enable Auto Config	activated	Automatic creation of a new CPU or CON device if new extender units are connected (default)
	deactivated	Function not active
ID Real CPU Device	Numerical value	Initial value of the automatic ID for real CPUs (default value: 1000)
ID Virtual CPU Device	Numerical value	Initial value of the automatic ID for virtual CPUs (default value: 2000)
ID Real CON Device	Numerical value	Initial value of the automatic ID for real CONs (default value: 3000)
ID Virtual CON Device	Numerical value	Initial value of the automatic ID for virtual CONs (default value: 4000)

OSD

➔ Select **Configuration > System** in the main menu.


admin@CON_010148887
ihse
Configuration
ESC
System
Device : SWITCH_01
Host name for network environment
Name : Standard
Info : Factory settings
Name of current matrix configuration
Sub Matrix : N
Allow hotkey control in cascaded environment
Load Default : N
Load always default configuration
Auto Save : N
Save matrix status automatically
Enable COM Echo : N
Echo all switch commands via COM ports
Enable LAN Echo : N
Echo all switch commands via LAN ports
Slave Matrix : N
Synchronize slave matrix with master matrix
Master IP Address : 000 .000 .000 .000
Enable Auto Config : Y
Assign new extender to a new CPU or CON unit
ID Real CPU Device : 1000
Start ID for automatic assignment of real CPU devices
ID Virt. CPU Device : 2000
Start ID for automatic assignment of virtual CPU devices
ID Real CON Device : 3000
Start ID for automatic assignment of real CON devices
ID Virt. CON Device : 4000
Start ID for automatic assignment of virtual CPU devices
Invalid IO-Boards : N
Keep IO-Boards with invalid firmware online for update
Enable old Echos : N
Echo internal switch commands with old format
OSD Data CPU
Horizontal mouse speed [1/x]: 4
Vertical mouse speed [1/x]: 5
Double click time [ms]: 200
Keyboard layout : German DE,129
Cancel
Okay
SWITCH_01
Draco tera

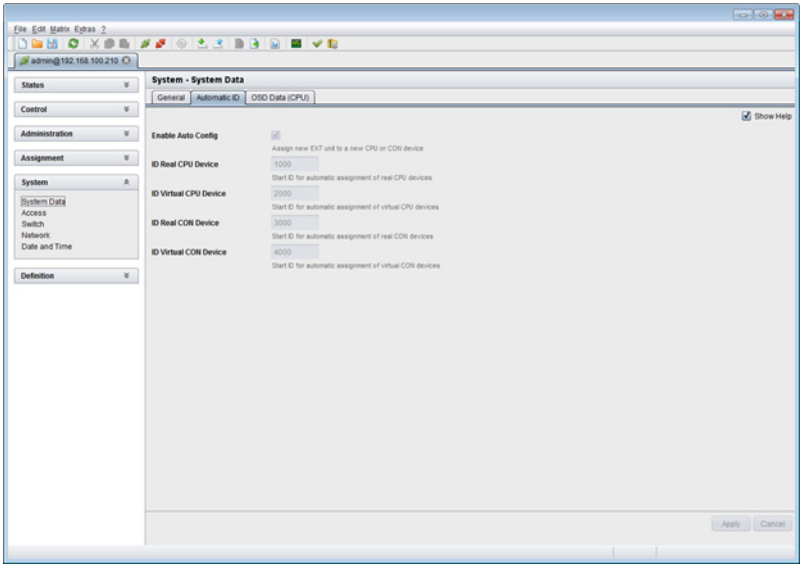
*Menu **Configuration – System***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select the tab **Automatic ID** in **System > System Data**.



*Menu **System – Automatic ID***

5.4.3 Access

The access configuration is set in this menu.

You have the following possibilities to access the menu:

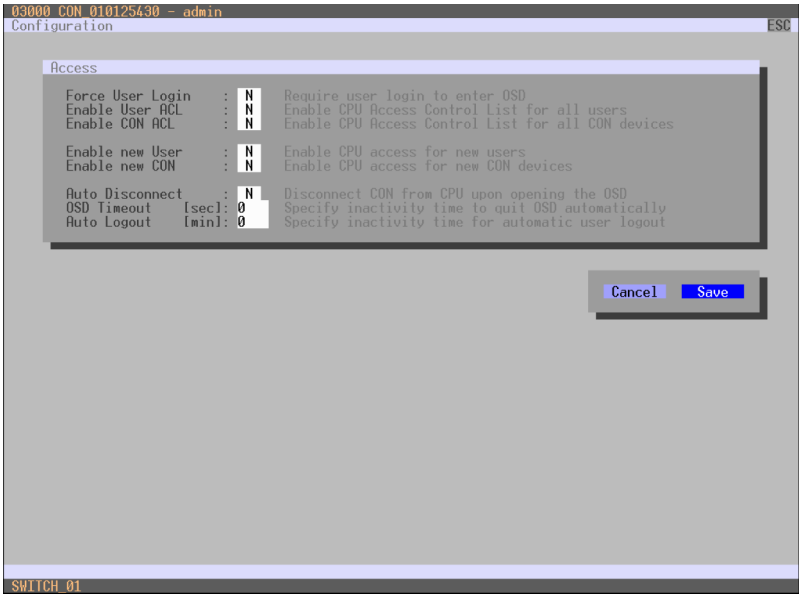
You can select between the following settings:

Field	Selection	Description
Force User Login	activated	The user has to login with a user name and a password once to enter OSD. Thereafter the user remains logged in until he explicitly logs out or an auto logout is effected. **Note:** When using the function **Force User Login**, console favorites and console macros still remain active.
	deactivated	Function not active (default)
Enable User ACL	activated	CPU access is restricted according to the permissions in the ACL (Access Control List). • User login is required. • Switching by keyboard 'Hot Keys' requires a prior login.
	deactivated	Function not active (default)
Enable Console ACL	activated	CPU access is restricted according to the permissions in the respective Console ACL (Access Control List). No login required
	deactivated	Function not active (default)
Enable new User	activated	Newly created users automatically receive access to all CPUs
	deactivated	Function not active (default)
Enable new CON	activated	Newly created CON devices automatically receive access to all CPUs
	deactivated	Function not active (default)
Auto Disconnect	activated	Upon opening the OSD, the console will be automatically disconnected from the current CPU.
	deactivated	Function not active (default)

Field	Selection	Description
OSD Timeout	0-999 seconds	Period of inactivity after which OSD will be closed automatically. • Select 0 seconds for no timeout (default: 0 seconds)
Auto Logout	0-999 minutes	Period of inactivity of a logged-in user at a console after which he will be automatically logged out at this console. There might be a disconnect because of the logout, depending on the defined rights in each CON and user ACL. • Select 0 minutes for an automatic user logout when leaving OSD. – Using the setting **-1** allows the user to be logged in permanently, until a manual logout is executed. • The timer is not active as long as the OSD is open. (default: 0 minutes)

OSD

➔ Select **Configuration > Access** in the main menu.


03000 CON 010125430 - admin
Configuration
ESC
Access
Force User Login : N Require user login to enter OSD
Enable User ACL : N Enable CPU Access Control List for all users
Enable CON ACL : N Enable CPU Access Control List for all CON devices
Enable new User : N Enable CPU access for new users
Enable new CON : N Enable CPU access for new CON devices
Auto Disconnect : N Disconnect CON from CPU upon opening the OSD
OSD Timeout [sec]: 0 Specify inactivity time to quit OSD automatically
Auto Logout [min]: 0 Specify inactivity time for automatic user logout
Cancel
Save
SWITCH_01

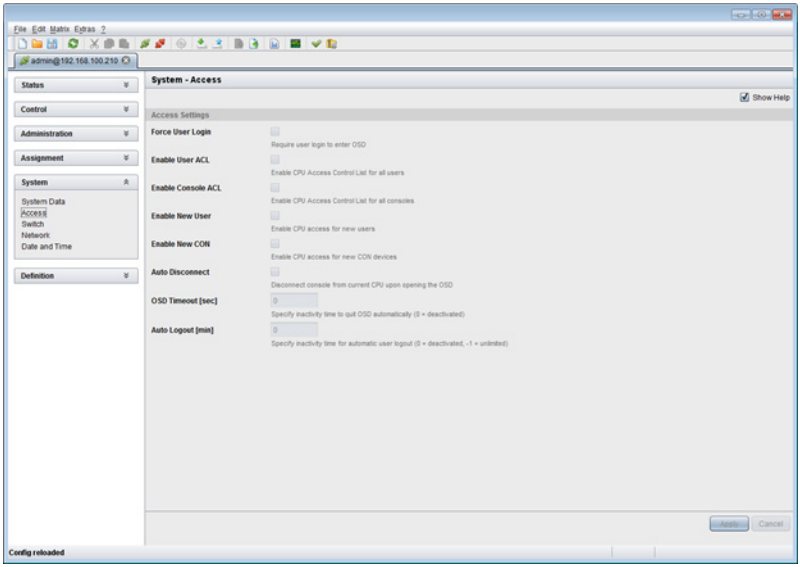
*Menu **Configuration – Access***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **System > Access** in the task area.



*Menu **System – Access***

5.4.4 Switch

The configuration of the switching parameters is set in this menu.

You have the following possibilities to access the menu:

You can select between the following settings:

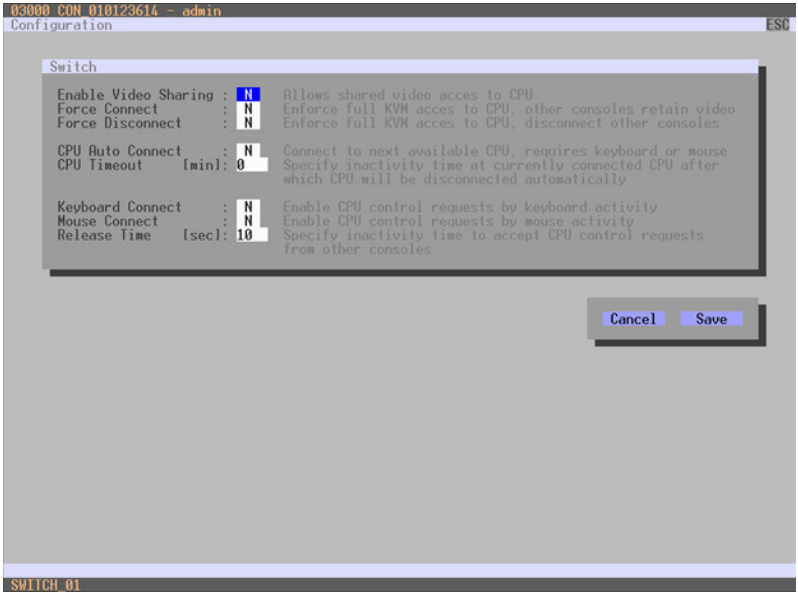
Field	Selection	Description
Video Sharing	activated	The user can switch to any CPU as an observer, even to such ones that are already assigned to another user (observer without keyboard/mouse access). • **Note:** Switching with the key <Space>, not <Enter>. • The operator will not be informed if further users connect as an observer to the CPU that is connected to his console.
	deactivated	Function not active (default)
Force Connect	activated	The user can connect to every single CPU as an operator, even to such ones that are related to another user. • **Note:** The previous user is set to video only status. • To share K/M control, **Force Connect** has to be activated.
	deactivated	Function not active (default)
Force Disconnect	activated	Extension of **Force Connect**: If the user connects to a CPU as an operator that is already related to another user, the connection to the previous user will be completely disconnected. **Note:** To share K/M control **Force Disconnect** has to be deactivated.
	deactivated	Function not active (default)

Field	Selection	Description
CPU Auto Connect	activated	If a console is not connected to a CPU, you can establish an automatic connection to the next available CPU by hitting any key or mouse button.
	deactivated	Function not active (default)
CPU Timeout	0 – 999 minutes	Period of inactivity after which a console will be automatically disconnected from its current CPU (default value: 0 minutes)
Keyboard Connect	activated	Activate request of K/M control by keyboard event (key will be lost)
	deactivated	Function not active (default)
Mouse Connect	activated	Activate request of K/M control by mouse event
	deactivated	Function not active (default)
Release Time	0-999 seconds	Period of inactivity of a connected console after which K/M control can be requested by other consoles connected to the CPU. • **Note:** Set "0" for an immediate transfer in real-time. • Only one console can have keyboard and mouse control at the same time. The other consoles that are connected to the same CPU have a video only status (default value: 10 seconds)

If the options **Keyboard Connect** and/or **Mouse Connect** are activated, the condition **Release Time** will have to be met until a new user will gain control.

OSD

➔ Select **Configuration > Switch** in the main menu.


03000 CON 010123614 - admin
Configuration
ESC
Switch
Enable Video Sharing : N
Force Connect : N
Force Disconnect : N
Allows shared video acces to CPU
Enforce full KVM acces to CPU, other consoles retain video
Enforce full KVM acces to CPU, disconnect other consoles
CPU Auto Connect : N
CPU Timeout [min]: 0
Connect to next available CPU, requires keyboard or mouse
Specify inactivity time at currently connected CPU after which CPU will be disconnected automatically
Keyboard Connect : N
Mouse Connect : N
Release Time [sec]: 10
Enable CPU control requests by keyboard activity
Enable CPU control requests by mouse activity
Specify inactivity time to accept CPU control requests from other consoles
Cancel
Save
SWITCH 01

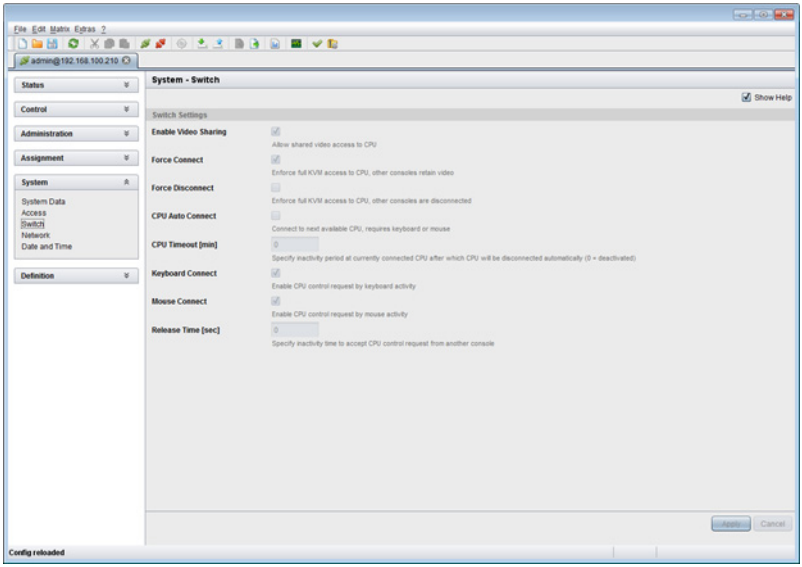
*Menu **Configuration – Switch***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **System > Switch** in the task area.



*Menu **System – Switch***

5.4.5 Network

The network configuration is set in this menu.

You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
DHCP	activated	The network settings are automatically supplied by a DNS server **Note:** If DHCP is activated and there is no physical network connection available, the boot times might increase.
	deactivated	Function not active (default)
IP address	Byte	Input of the IP address, if DHCP is not active (default: 192.168.100.99)
Subnet Mask	Byte	Input of the subnet mask in the form "255.255.255.0", if DHCP is not active (default: 255.255.255.0)
Gateway	Byte	Input of the subnet mask in the form "192.168.1.1", if DHCP is not active
API Service	activated	LAN interface at the Draco tera activated for access via Java tool (API service port 5555)
	deactivated	Function not active
FTP Server	activated	FTP server for transmission of configuration files activated.
	deactivated	Function not active
Syslog	activated	Syslog server for status request is active
	deactivated	Function not active (default)
Syslog Server	Byte	Input of the IP address of the Syslog servers in the form “192.168.1.1”

Field	Selection	Description
Trace	DEB	Activate debug messages in Trace (default: NO) **Note:** The debug messages are exclusively for matrix diagnostics. They only should be activated after consultation with the manufacturer. Otherwise an increased traffic of data might limit the performance of the CPU board.
	INF	Activate information messages in Trace (default: NO)
	NOT	Activate notification messages in Trace (default: YES)
	WAR	Activate warning messages in Trace (default: YES)
	ERR	Activate error messages in Trace (default: YES)
Syslog	DEB	Activate debug messages in Syslog (default: NO) **Note:** The debug messages are exclusively for matrix diagnostics. They only should be activated after consultation with the manufacturer. Otherwise an increased traffic of data might limit the performance of the CPU board.
	INF	Activate information messages in Syslog (default: NO)
	NOT	Activate notification messages in Syslog (default: YES)
	WAR	Activate warning messages in Syslog (default: YES)
	ERR	Activate error messages in Syslog (default: YES)

Activate the modified network parameters by doing a restart.

Consult your system administrator before modifying the network parameters. Otherwise unexpected results and failures can occur in combination with the network.

OSD

➔ Select **Configuration > Network** in the main menu.

admin@CON_010125349
Configuration
ESC
Network Interface
DHCP : Y Enable configuration of network parameters via DHCP server
IP Address : 192 .168 .100 .099
Subnet Mask : 255 .255 .255 .000
Gateway : 000 .000 .000 .000
Network Services
API Service : Y Enable API Service port (5555)
FTP Server : Y Enable FTP Server for configuration file transfers
Syslog : Y Enable Syslog Messages (license key required)
Syslog Server : 192 .168 .100 .111
Log Levels
Trace : DEB N INF N NOT Y WAR Y ERR Y
Syslog : DEB N INF Y NOT N WAR N ERR Y
Cancel
Okay
SWITCH_01

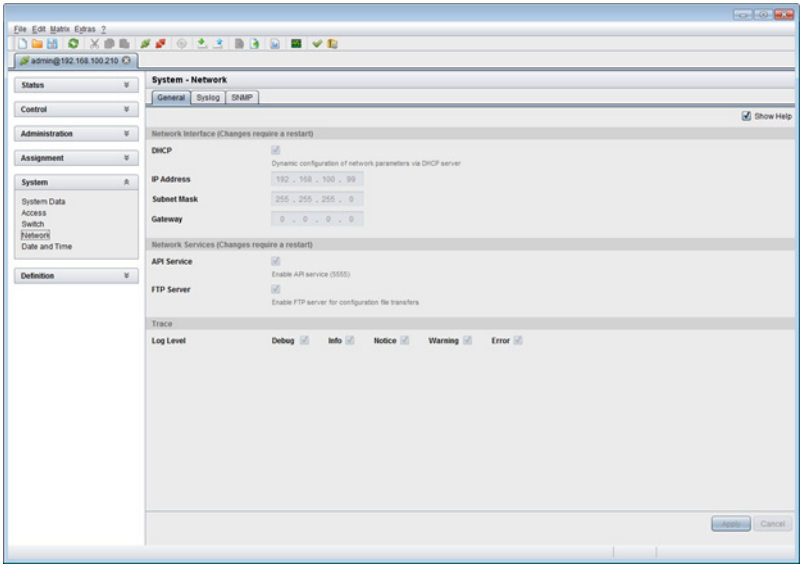
*Menu **Configuration – Network***

You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **System > Network** in the task area.



*Menu **System – Network***

5.4.6 Date and Time

Date and Time are set in this menu, based on Simple Network Time Protocol (SNTP).

You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
SNTP Client	activated	Enable network time server synchronization
	deactivated	Function not active (default)
SNTP Server	Byte	Input of the SNTP server IP address (default: 000.000.000.000)
Time Zone	Region	Set your specific time zone
Month	1–12	Enter month
Date	1–31	Enter date
Year	1–99	Enter year
Day	1–7	Enter day of the week
Hours	0–23	Enter hour
Minutes	0–59	Enter minute
Seconds	0–59	Enter second

Date format according to the English notation.

OSD

➔ Select **Configuration > Date+Time** in the main menu.

admin@CON_010148887
Configuration
ESC
Time Server
SNTP Client : Y Enable the synchronisation with a network time server
SNTP Server : 000 .000 .000 .000
Time Zone : GMT+01 Select your time zone
Real Time Clock
Date : 12 /21 /12 Enter the date with format MM/DD/YY
MM = month (1..12) DD = day (1..31) YY = year (0..99)
Day : 05 Enter the day of the week
1 = Monday 2 = Tuesday ... 7 = Sunday
Time : 07 :53 :57 Enter the time with format hh:mm:ss
hh = hours (0..23) mm = minutes (0..59) ss = seconds (0..59)
Set RTC
Cancel
Okay
test-device

*Menu **Configuration – Date + Time***

In order to configure a time server, proceed as follows:

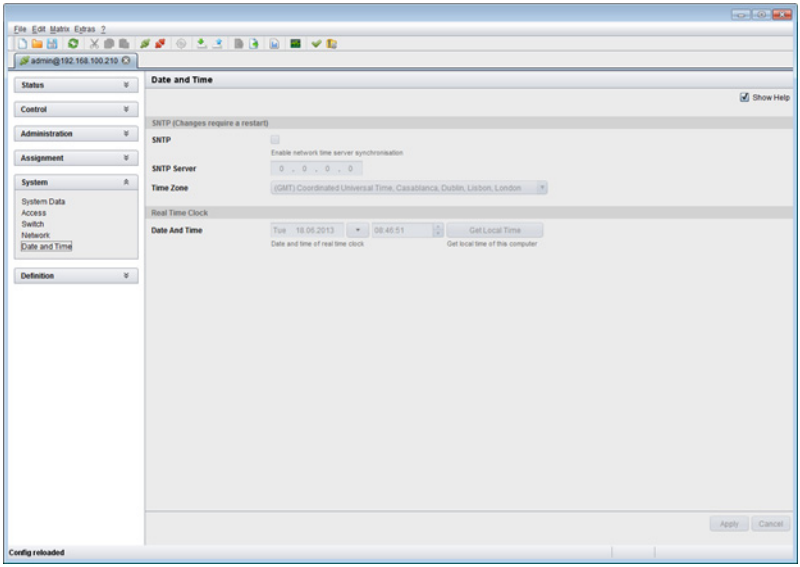
1. Set the option **SNTP Client** to **Y** (Yes).
2. Enter the IP address of your SNTP server in the field **SNTP Server**.
3. Select your time zone in the field **Time Zone**.
4. Press the button **Okay** to confirm your settings.
5. Restart the matrix. The system time will be now provided by the SNTP server.

In order to set the real time clock without using SNTP, proceed as follows:

1. Set the current date in the field **Date**.
2. Set the current Day in the field **Day**.
3. Set the current time in the field **Time**.
4. Press the button **RTC** to confirm your settings.

Java

➔ Select **System > Date and Time** in the main menu.



*Menu **Configuration – Date and Time***

In order to configure a time server, proceed as follows:

1. Enable option **SNTP**.
2. Enter the IP address of your SNTP server in the field **SNTP Server**.
3. Select your time zone in the field **Time Zone**.
4. Press the button **Apply** to confirm your settings.
5. Restart the matrix. The system time will be now provided by the SNTP server.

In order to set the real time clock without using SNTP, proceed as follows:

1. Set the current date in the field **Date and Time**.
2. Set the current time in the field **Day and Time**.
3. Press the button **Apply** to set the system time.
4. Option: If you want to receive the time from your currently used computer, press the button **Get Local Time**.

5.5 User Settings

You have the possibility to configure the following user settings:

5.5.1 User

New users and their user settings and permissions are set in this menu.

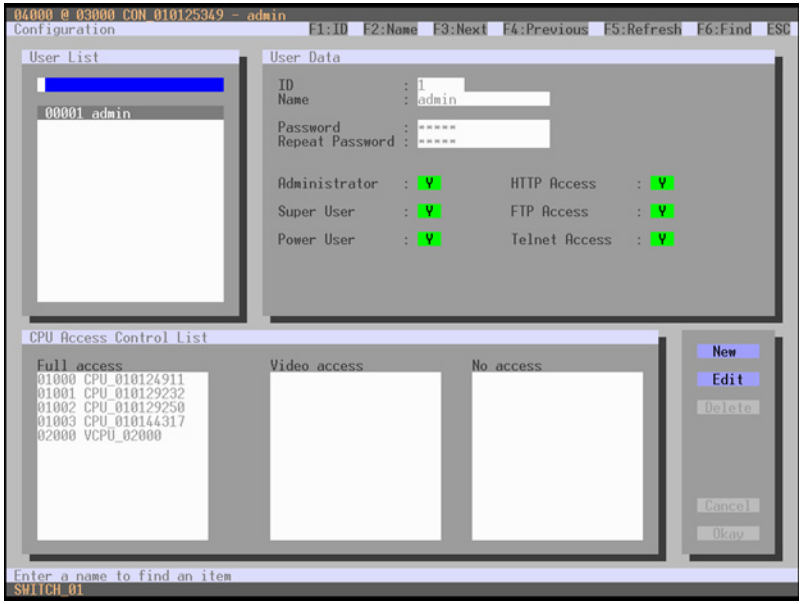
You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
Name	Text	User name (case sensitive)
Password	Text	User password (case sensitive)
Repeat Password	Text	Repeat user password (case sensitive)
FTP	activated	Access permission via FTP. This setting is necessary for file access from the Java tool or any web browser.
	deactivated	Function not active (default).
Power User	activated	• User has user rights • Permission to switch consoles to CPUs in **Extended Switching** according to the **CON** or **User ACL**
	deactivated	Function not active.
Super User	activated	Permission to switch any console to any CPU in **Extended Switching**.
	deactivated	Function not active.
Administrator	activated	• Permission for system configuration and all switching operations • User has administrator rights • This setting is required for an online connection with the Java tool
	deactivated	Function not active.

OSD

➔ Select **Configuration > User** in the main menu.



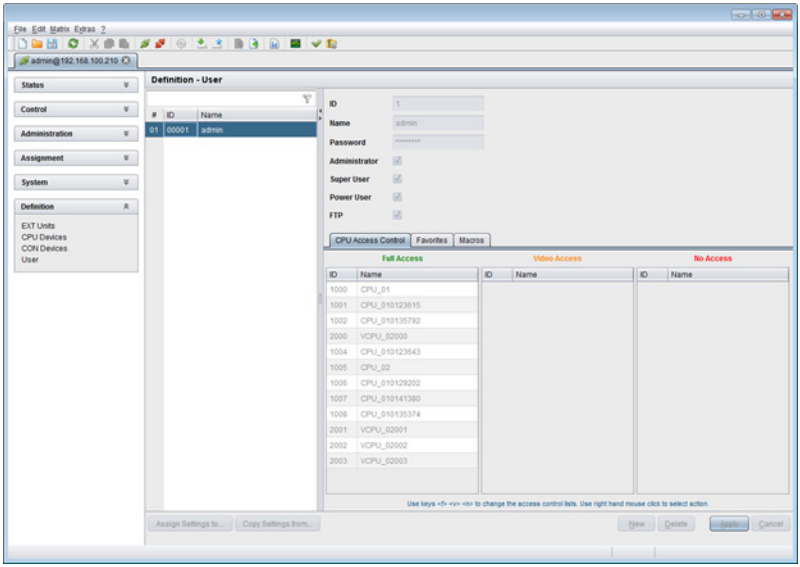
*Menu **Configuration – User***

You can select between the following buttons:

Button	Function
New	Create a new user
Edit	Edit an existing user
Delete	Delete an existing user
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **Definition > User** in the task area.



*Menu **Definition – User***

You can select between the following buttons:

Button	Function
New	Open a new user configuration
Delete	Delete an existing user
Apply	Create a new user account
Cancel	Reject changes

In order to configure a user access rights for CPUs, proceed as follows:

1. Select a user in the list **User**.
2. By using the right mouse button once on a CPU in one of the respective access lists (**Full Access**, **Video Access** and **No Access**) two lists for selection will appear in which the respective CPU can be moved and the access rights can be changed.
3. Confirm the configuration with the button **Apply**.

In order to create a new user, proceed as follows:

1. Press the button **New**.
2. Select a template of an existing user if applicable (**Choose template**).
3. Press the button **OK**.
4. Set a user name.
5. Set a password.
6. Set general access permissions.
7. Set user permissions for CPU access (paste function).
8. Set user favorites for OSD access.
9. Press the button **Apply** to save the new user settings.

You can select between the following keyboard commands:

Function	Keyboard Command
Add CPU to list **Full Access**	<F>
Add CPU to list **Video Access**	<V>
Add CPU to list **No Access**	<N>

5.5.2 Favorite List Users

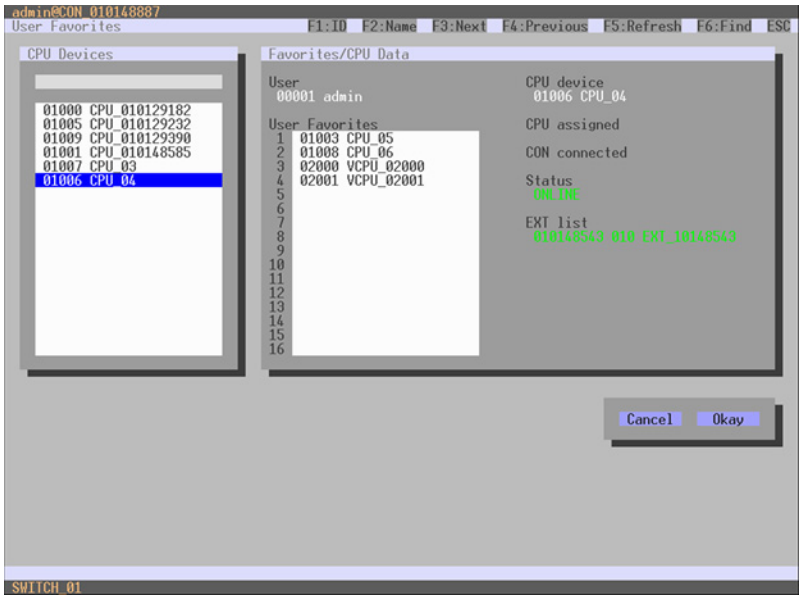
Individual favorite lists of CPUs that have to be switched frequently can be created for different users in this menu. A favorite list can contain up to eight different CPUs.

The switching of the favorites is done via 'Hot Key' using the keyboard (see Chapter 6.1.1, Page 157).

You have the following possibilities to access the menu:

OSD

➔ Select **Assignments > User Favorites** in the main menu.



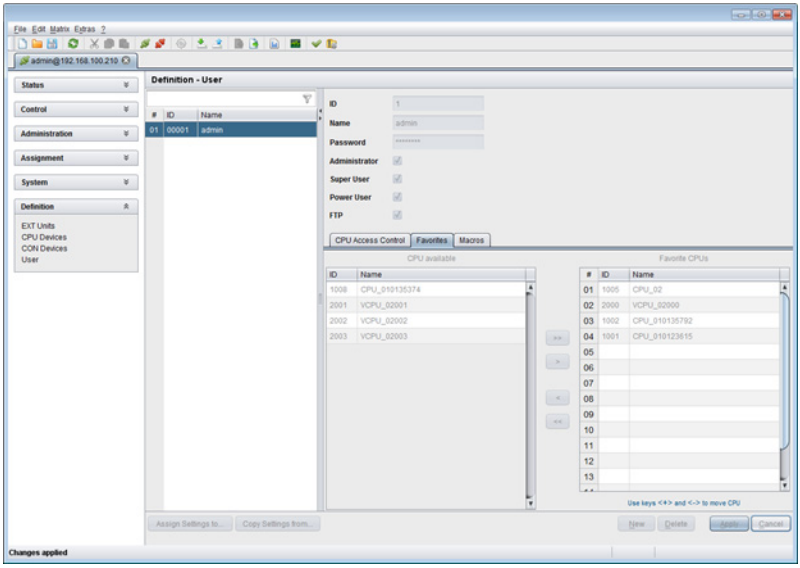
*Menu **Assignments – User Favorites***

To create a favorite list for you own user, proceed as follows:

1. Select successively these CPUs from the list **CPU Devices** that have to be moved to the favorite list. By pressing the key <a>, a CPU device will be moved to the favorite list and it will be removed by pressing <r>.
2. The order of the CPU devices within the favorite list can be changed by pressing the keys <+> and <->.
3. Press the button **Save** to save the settings.

Java-Tool

➔ Select the respective user in the working area of the menu **User** for the favorite list and open the tab **Favorites**.



*Menu **Definition – User***

To create a favorite list for any user, proceed as follows:

1. Select the CPUs in the list **CPU available** that should be added to the favorite list (**CPU assigned**). By pressing the key <Ctrl> at the same time, more than one CPU device can be marked.
2. Press the button **>** to move the marked CPU devices to the favorite list. If you press the button **>>**, the first eight CPU devices from the list **CPU available** will be moved to the favorite list (**CPU assigned**).
3. The order of marked CPU devices within the favorite list can be changed by pressing the keys<+> and <->.
4. In order to remove marked CPU devices from the favorite list, press the button **<**. If you press the button **<<**, all CPU devices will be removed from the favorite list.

5.5.3 User Macros

In this menu macro commands for switching, disconnection or user administration can be created. The macro commands are created for each user separately.

A macro can execute up to 16 switching commands successively.

The execution of the macros is done via 'Hot Key' and the function keys <F1>-<F16> (see Chapter 6.1.3, Page 159).

In order to execute user macros the user has to be logged in at the matrix.

You can select between the following settings:

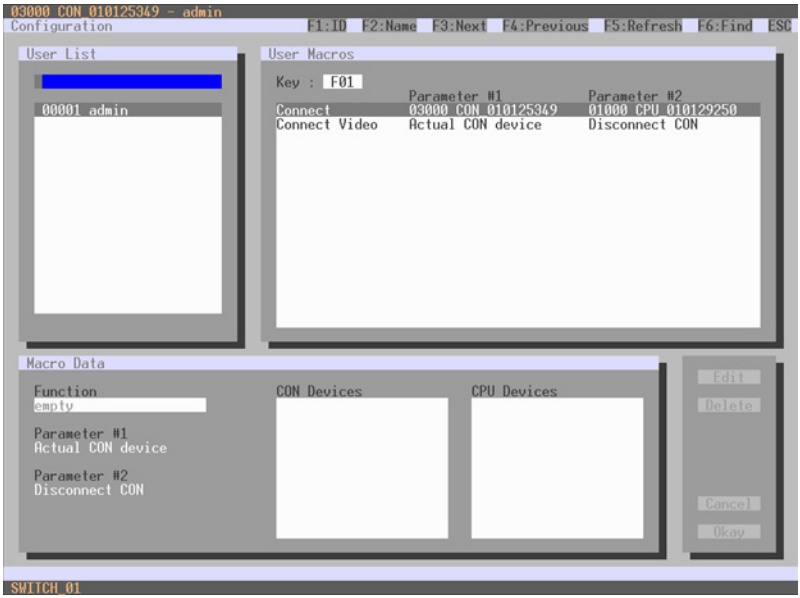
Field	Selection	Description
Function (01–16)	**Connect (P1=CON, P2=CPU)**	Set bidirectional connection from console P1 to CPU P2
	Connect Video (P1=CON, P2= CPU)	Set video connection from console P1 to CPU P2
	Disconnect (P1=CON)	Disconnect console P1
	Logout User	Logout current user
	Set Real CPU (P1=VCPU, P2=RCPU)	Assign a virtual CPU to a real CPU
	Set Virtual CON (P1=RCON, P2=VCON)	Assign a real console to a virtual console
	Push (P1=CON)	The own KVM connection is forwarded to console P1 and is changed to a video only connection.
	Push Video (P1=CON)	The video signal of the current connection (KVM or video only) is forwarded to console P1. The own connection remains unchanged (KVM or video only).

Field	Selection	Description
	Get (P1=CON)	The own console gets a KVM connection to the CPU that is currently connected to console P1. The connection of console P1 is changed into a video only connection.
	Get Video (P1=CON)	The own console gets a video only connection to the CPU that is currently connected to console P1. The connection of console P1 remains unchanged (KVM or video only).
P1	CON or CPU Device	Name of CON or CPU device
P2	CPU or CPU Device	Name of CON or CPU device

You have the following possibilities to access the menu:

OSD

➔ Select via **Configuration > User Macros** in the main menu the user for which a user macro has to be created.



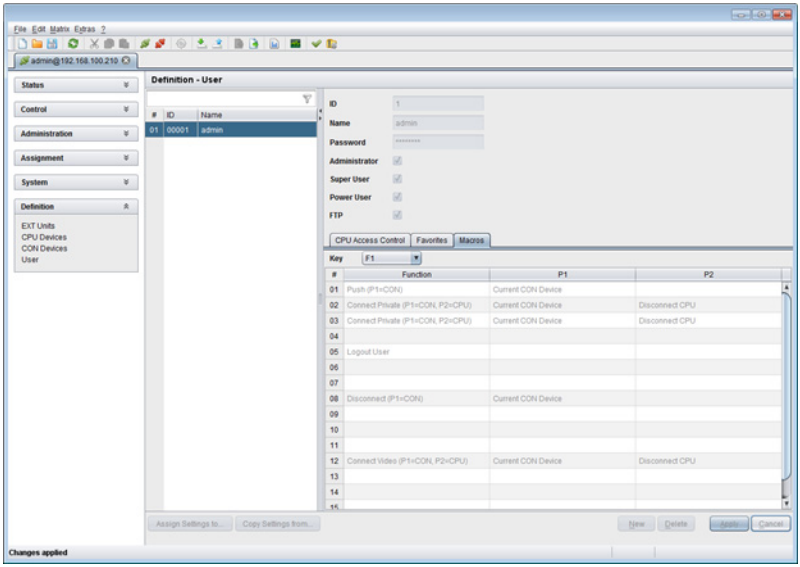
*Menu **Configuration – User Macros***

In order to create a macro for the selected user, proceed as follows:

1. Select in the field **Key** that one (1-16) for which a macro has to be created.
2. Select the respective place on the list (1-16) of the key that has to be set with a macro key.
3. Select for the marked place on the list a macro command in the field **Macro Data**.
4. Set the necessary parameters **P1** and **P2** (e.g. CON Devices or CPU Devices) for the selected macro command.
5. Confirm your inputs by pressing the key <Enter> and repeat the process for further macro commands, if necessary.

Java-Tool

➔ Select in the working area of menu **Definition > User** the user for which macros have to be created and open the tab **Macros**.



*Menu **Definition – User***

In order to create a macro for the selected user, proceed as follows:

1. Select in the field **Key** that one (1-16) for which a macro has to be created.
2. Select in the column **Function** the commands that should be part of the macro. The selection list is opened by a double click on the empty fields.
3. Select in the columns **P1** and **P2** the respective parameters for the macro functions (e.g. corresponding consoles and CPUs).
4. Confirm your inputs by pressing the button **Apply**.

For an efficient macro configuration the following context functions are available:

➔ Via right click on the tab **Macros**, macros can be assigned to other users by using the function **Assign Macros to ...** and can be copied from other users by using the function **Copy Macros from ...**.

➔ Via right click on the macro list, macros of the selected key can be copied into the cache by using the function **Copy Key Macros**. You can paste the macros from the cache into a key by using the function **Paste Key Macros** and you can reset all macros of the selected key by using the function **Reset Key Macros**.

5.6 Extender Settings

All extender units are managed in this menu. This also contains the creation of new extender units and the deletion of existing extender units.

The extender unit describes the connection of an physical extender to the matrix. Every extender board with a direct cable connection to the matrix is recognized as an extender unit. Dual-Head KVM extenders will be recognized as two independent extender units.

KVM Extenders automatically create extender units inside the matrix.

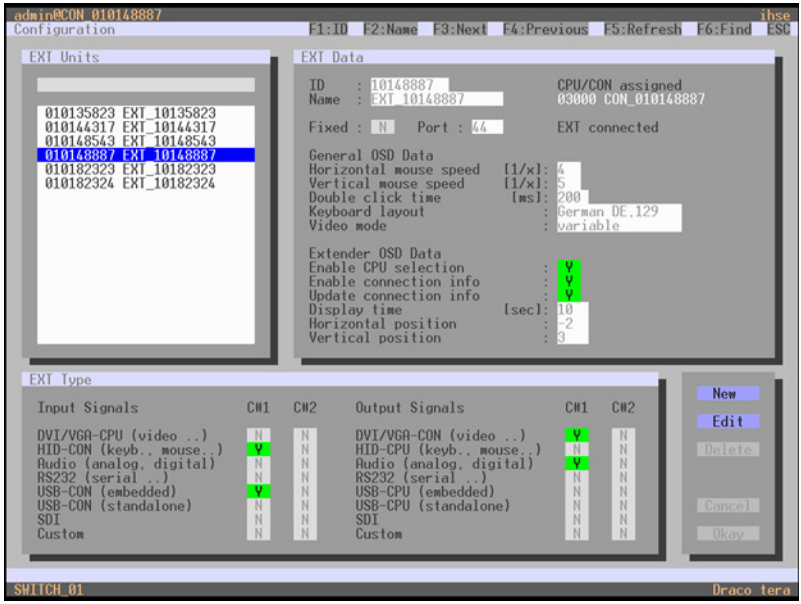
You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
ID	Text	Numerical value of the extender ID (KVM extenders: ID is provided by extender unit (Serial No.) and cannot be changed)
Name	Text	Name of the extender unit
Fixed	activated	Create an extender unit with a fixed port assignment (default)
	deactivated	Function not active.
Port	1–288 (depending on the matrix)	Port number of the extender unit

OSD

➔ Select **Configuration > EXT Units** in the main menu.



*Menu **Configuration – EXT Units***

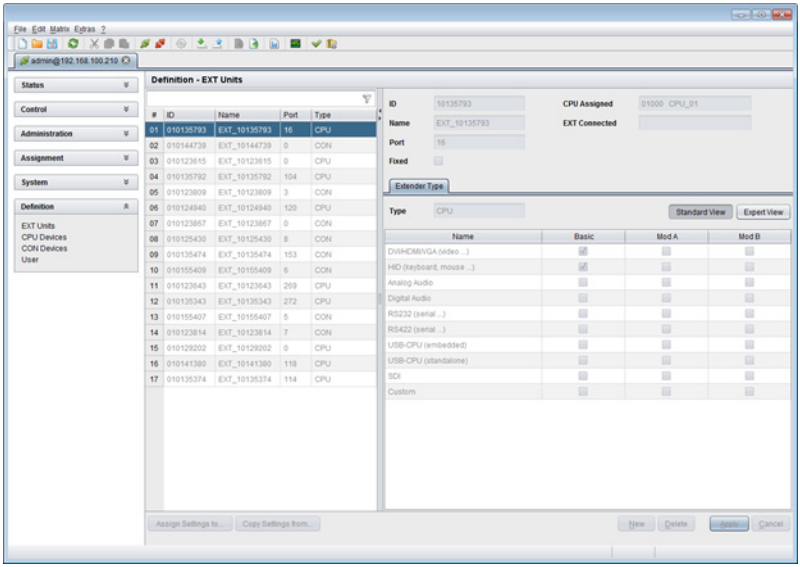
You can select between the following buttons:

Button	Function
New	Create a new extender unit
Edit	Edit an existing extender unit
Delete	Delete an existing extender unit
Cancel	Reject changes
Save	Save changes

The settings for the tab OSD Data are described in Chapter 5.8.2, Page 120.

Java Tool

➔ Select **Definition > EXT Units** in the task area.



*Menu **Definition – EXT Units***

You can select between the following buttons:

Button	Function
New	Create a new extender unit
Delete	Delete an existing unit
Apply	Confirm changes of an extender unit
Cancel	Reject changes

5.6.1 Creating Flex-Port Extender Unit

Extenders with ID function are automatically recognized by the system and cannot be created manually. They were used at so called Flex-Ports at the matrix.

The connection of fixed port extender unit (e. g. USB 2.0) to a Flex-Port can cause unintended results.

5.6.2 Creating Fixed Port Extender Units

In order to create a fixed port extender unit (e. g. USB 2.0), proceed as follows:

1. Press the button **New**.
2. Select, if a template of a USB 2.0 CON unit (**USB CON Unit**) or USB 2.0 CPU unit (**USB CPU Unit**) should be used.
3. Press the button **OK**.
4. Determine a port at the matrix that should be used with the USB 2.0 extender unit (**Fixed Port**). As an option the name of the USB 2.0 extender unit can be changed (**Name**).
5. Press the button **Apply** to save the new extender unit.

Created extender units are always set as fixed port extenders. These configurations are necessary, if you want to switch e. g. USB 2.0 connections via the matrix.

5.6.3 Deleting Flex-Port Extender Units

Deleting Flex-Port extender units connected to the matrix is not possible.

5.6.4 Deleting Fixed Port Extender Units

In order to delete a fixed port extender unit (e. g. USB 2.0), proceed as follows:

1. Verify that the fixed port extender unit to be deleted is currently not assigned to a device.
2. Select the fixed port extender unit to be deleted in the selection list on the left side of the menu **EXT Units** and confirm with the key <Enter>.
3. Press the button **Delete**.
4. Confirm the delete process with the button **Okay**.

In order to make a fixed port available again for Flex-Port extender units after deleting a fixed port extender unit, a restart of the I/O board is obligatory.

5.7 CPU Settings

New CPU devices are configured in this menu including their assignment to extenders.

The assignment helps to describe and switch more complex computer configurations (e.g. Quad-Head with USB 2.0) in the matrix.

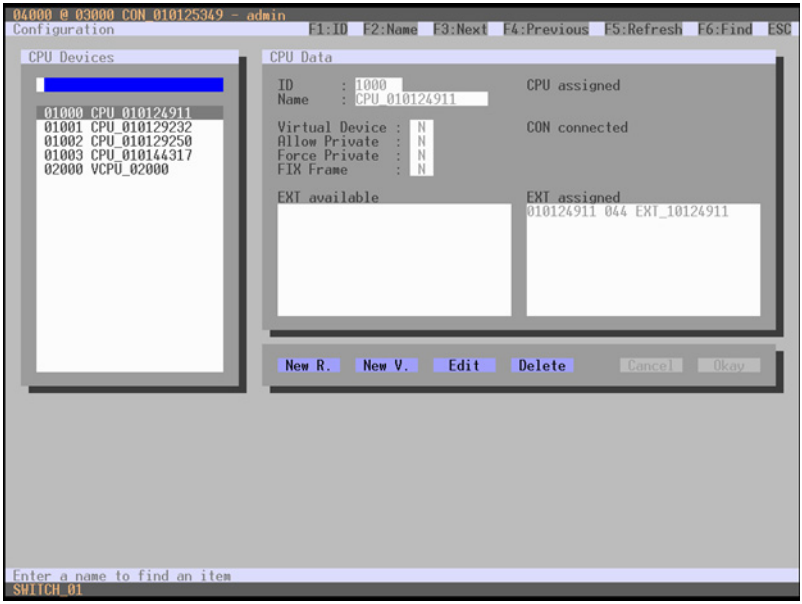
You have the following possibilities to access the menu:

You can select between the following settings:

Field	Selection	Description
ID	Text	ID of the CPU unit (see Chapter 5.4.2, Page 79).
Name	Text	Name of the CPU Device.
Virtual Device	activated	Create new CPU device as a virtual one.
	deactivated	Function not active (default).
Allow Private	activated	Allow switching to the respective CPU device in Private Mode
	deactivated	Function not active (default).
Force Private	activated	Force switching to the respective CPU only in Private Mode.
	deactivated	Function not active (default).
Fix Frame	activated	Force showing a red frame when switching to the respective CPU.
	deactivated	Function not active (default).

OSD

➔ Select **Configuration > CPU Units** in the main menu.



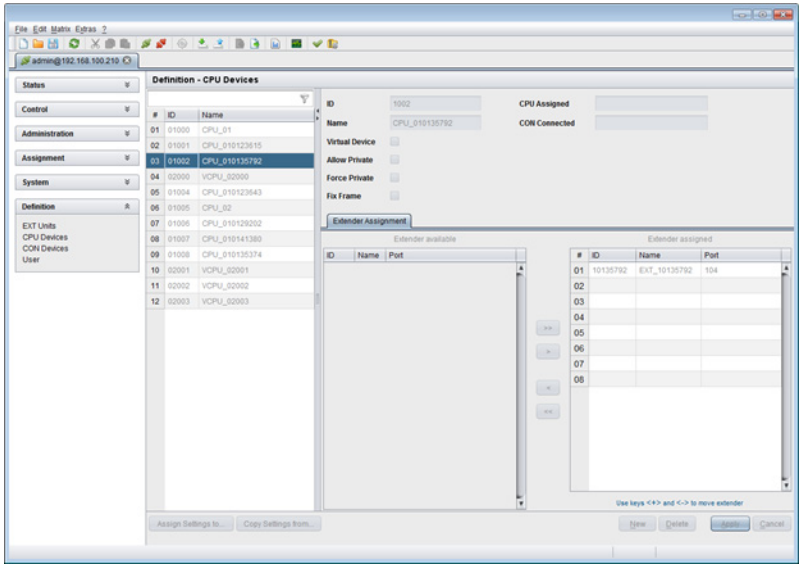
*Menu **Configuration – CPU Devices***

You can select between the following buttons:

Button	Function
New R.	Create a new real CPU device
New V.	Create a new virtual CPU device
Edit	Edit an existing CPU device
Delete	Delete an existing CPU device
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **Definition > CPU Devices** in the task area.



*Menu **Definition – CPU Devices***

You can select between the following buttons:

Button	Function
New	Open a new CPU Device
Delete	Delete a new CPU Device
Apply	Confirm a created CPU Device
Cancel	Reject changes
>	Assign selected extender units
>>	Assign all available extender units
<	Remove the selected extender units
<<	Remove all extender units

You can select between the following keyboard commands:

Function	Keyboard Command
Change assignment number of the EXT unit upwards	<+>
Change assignment number of the EXT unit downwards	<->

In order to create a new CPU device, proceed as follows:

1. Press the button **New**.
2. Select, if a real CPU (**Create a real CPU**) or a virtual CPU (**Create a virtual CPU**) should be created or a template of an existing CPU should be used (**Choose template**).

A template can only be used, if there is at least one existing CPU device.

3. Press the button **OK**.
4. Determine all parameters that are relevant for the CPU.
5. To confirm the new CPU, press the button **Apply**.

In order to access a new CPU via matrix, an assignment of one or more CPU type extender units is required. Proceed as follows:

1. Select the new CPU in the list **CPU Devices**.
2. Select one or more extenders in the list **Extender available**.
3. Perform the assignment by pressing the button **>**. To assign all available extenders to the CPU, press the button **>>**.

   The assignments are displayed in the list **Extender assigned**.
4. Confirm the assignment by pressing the button **Apply**.

In order to remove an extender assignment, proceed as follows:

1. Select a CPU in the list **CPU Devices**.
2. Select one or more extenders in the list **Extender assigned**.
3. Remove the assignment with the button **<**. To remove all existing assignments, press the button **<<**.
4. Confirm the removal with the button **Apply**.

5.8 Console Settings

You have the possibility to perform the following console settings:

5.8.1 CON Devices

New CON devices are created in this menu including access rights and assignment to extenders.

You have the following possibilities to access the menu:

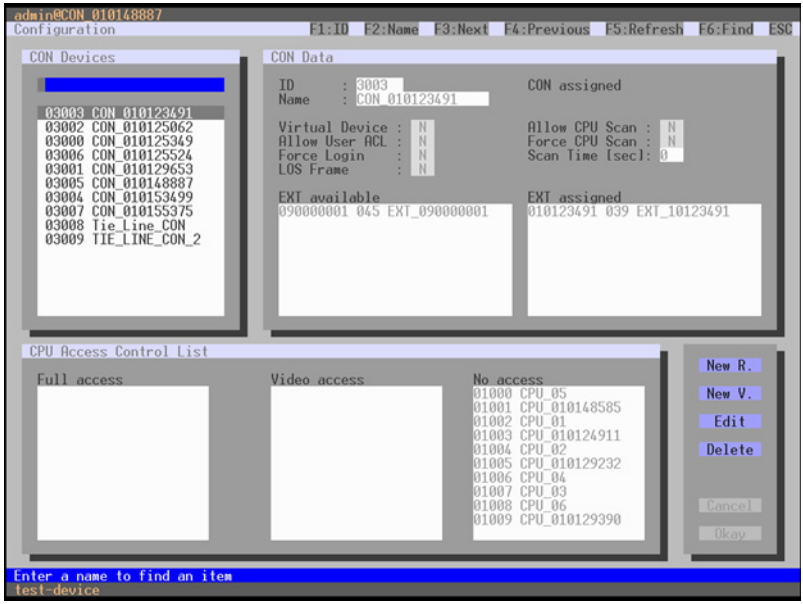
You can select between the following settings:

Field	Selection	Description
ID	Text	ID of the CON unit (see Chapter 5.4.2, Page 79).
Name	Text	Name of the CON device.
Virtual Device	activated	Create new CON device as a virtual one.
	deactivated	Function not active (default).
Allow User ACL	activated	Allow activation of the User ACL at the local console.
	deactivated	Function not active (default).
Force Login	activated	Force user login at this CON device.
	deactivated	Function not active (default).
LOS Frame	activated	• When losing the video signal between source (computer, CPU) and the CPU unit or when losing the connection between the matrix and the CON unit, there will be displayed an orange frame. • When switching to a CPU without video signal, a blank screen will appear surrounded by an orange frame.
	deactivated	Function not active (default).

Field	Selection	Description
Allow CPU Scan	activated	Allow a scan mode with an automatic change of the video signal for the favorite list (CPU devices) of the respective console or a logged in user.
	deactivated	Function not active (default).
Force CPU Scan	activated	Force a scan mode with an automatic change of the video signal for the favorite list (CPU devices) of the respective console or a logged in user.
	deactivated	Function not active (default).
Scan Time	0-99 seconds	Retention period until switching to the next CPU device.

OSD

➔ Select **Configuration > CON Devices** in the main menu.



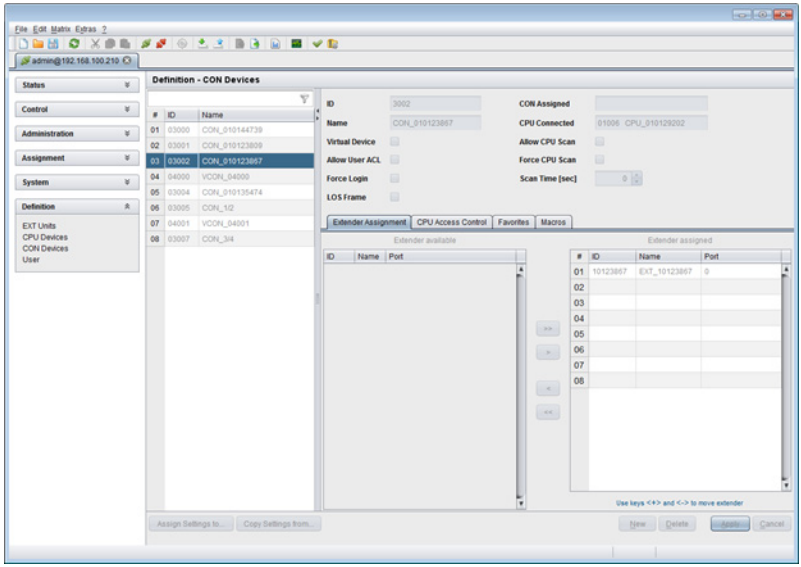
*Menu **Configuration – CON Devices***

You can select between the following buttons:

Button	Function
New R.	Create a real console
New V.	Create a virtual console
Edit	Edit an existing console
Delete	Delete an existing console
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **Definition > CON Devices** in the task area.



*Menu **Definition – CON Devices***

You can select between the following buttons:

Button	Function
New	Open a new CON device
Delete	Delete a new CON device
Apply	Confirm a created CON device
Cancel	Reject changes
>	Assign selected extender units
>>	Assign all available extender units
<	Remove the selected extender units
<<	Remove all extender units

You can select between the following keyboard commands:

Function	Keyboard Command
Decrease assignment number of the extender unit	<+>
Increase assignment number of the extender unit	<->

In order to create a new console, proceed as follows:

1. Press the button **New**.
2. Select, if a real console (**Create a real Console**) or a virtual console (**Create a virtual Console**) should be created or a template of an existing console should be used (**Choose template**).

A template can only be used, if there is at least on existing CON device.

3. Press the button **OK**.
4. Determine all parameters that are relevant for the console.
5. To confirm a created console, press the button **Apply**.

In order to run a created CPU via matrix, it requires an assignment of one or more CON units (extender). To place an assignment, please proceed as follows:

1. Select the console in the list **CON Devices** that has to be assigned to an extender.
2. Select the extender in the list **Extender available** that should be assigned to the CON.
3. Perform the assignment by pressing the button **>**. To assign all available extenders to the console, press the button **>>**. The assignments are displayed in the list **Extender assigned**.
4. Confirm the assignment by pressing the button **Apply**.

In order to remove an extender assignment, proceed as follows:

1. Select the console in the list **CON Devices** to be modified.
2. Select the extender(s) in the list **Extender assigned** to be removed.
3. Remove the assignment with the button **<**. To remove all existing assignments, press the button **<<**.
4. Confirm the changes by pressing the button **Apply**.

In order to configure CPU access rights of consoles, proceed as follows:

1. Select a console in the list **CON Devices**.
2. Open the tab **CPU Access Control**.
3. Assign new access rights by using the right mouse button or the respective keyboard commands (cf. below).
4. Confirm the configuration by pressing the button **Apply**.

You can select between the following keyboard commands:

Function	Keyboard Command
Add CPU to list **Full Access**	<F>
Add CPU to list **Video Access**	<V>
Add CPU to list **No Access**	<N>

5.8.2 Mouse and Keyboard

The OSD configuration for mouse and keyboard is made in this menu.

You have the following possibilities to access the menu:

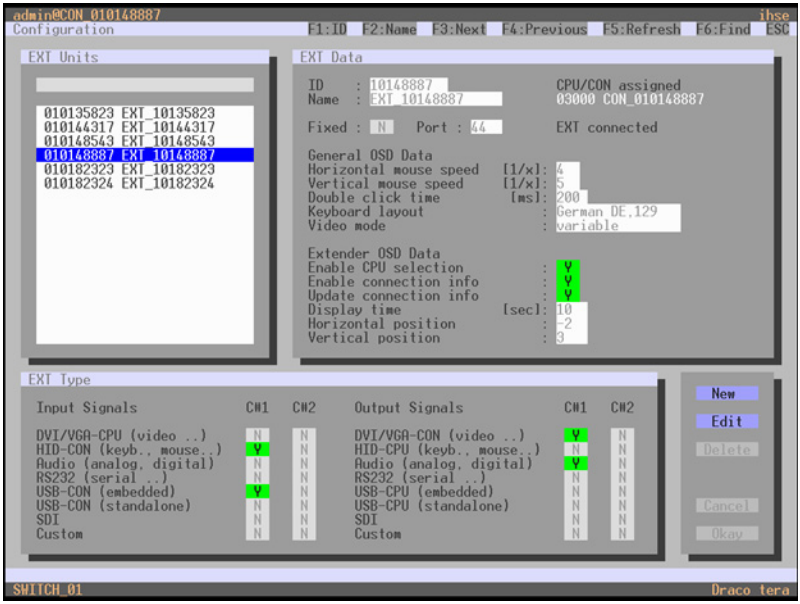
You can select between the following settings:

Field	Selection	Description
Hor. Speed 1/x	1–9	Adjustment of the horizontal mouse speed, 1 = slow, 9 = fast (default value: 4)
Ver. Speed 1/x	1–9	Adjustment of the vertical mouse speed, 1 = slow, 9 = fast (default value: 5)
Double Click	100–800	Adjustment of the time slot for a double click (default value: 200 ms)
Keyboard layout	Region	Set the OSD keyboard layout according to the used keyboard (default: German (DE))
Video Mode	Variable or specific resolution	Resolution that is used when opening OSD

The mouse and keyboard settings are console specific and can be separately set for each console.

OSD

➔ Select **Configuration > EXT Units** in the main menu.



*Menu **Configuration – EXT Units***

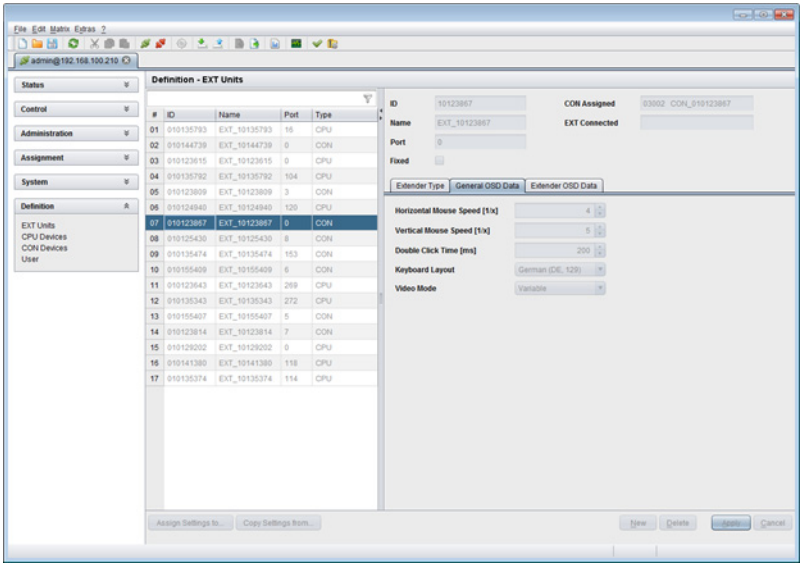
You can select between the following buttons:

Button	Function
Cancel	Reject changes
Save	Save changes

Java Tool

➔ Select **Definition > EXT Units** in the task area.

Mouse and keyboard settings are made in the tab **OSD Data**.



*Menu **Definition – EXT Units***

5.8.3 Extender OSD

In this menu the settings for the Extender OSD can be adjusted. These are local settings that can be made individually for each console.

You can select between the following Extender OSD settings:

Field	Selection	Description
Enable CPU Selection	activated	When executing the key sequence for opening the OSD, a selection list for switching CPU devices will be displayed in the center of the monitor. Pressing the button <F7> within the selection list opens the standard OSD.
	deactivated	Function not active (default)
Enable Connection Info	activated	Enable Extender OSD (default: YES)
	deactivated	Function not active
Update Connection Info	activated	Update connection changes during fade-in of Extender OSD (default: YES)
	deactivated	Function not active
Display Time	0-999 seconds	Duration of OSD fade-in (default: 10)
Horizontal Position	10 pixels	Horizontal OSD position (default: -2)
Vertical Position	10 pixels	Vertical OSD position (default: 2)

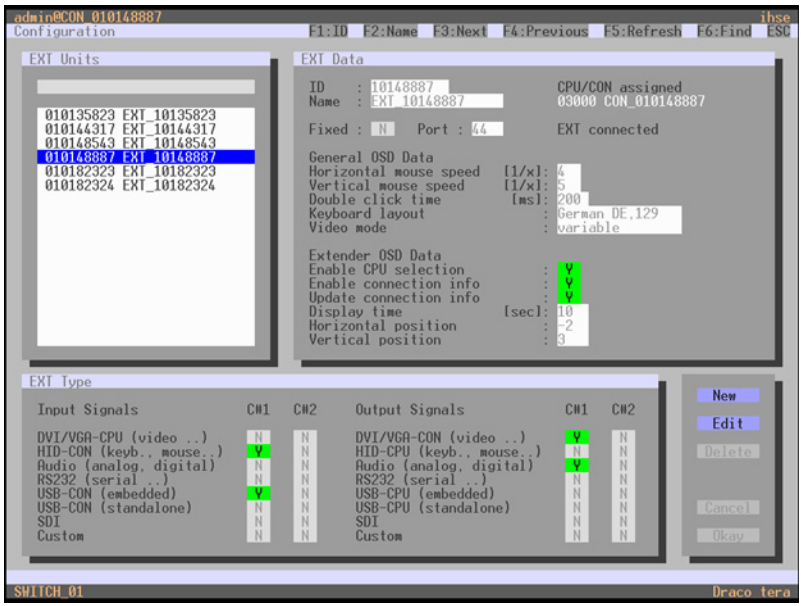
When setting the horizontal OSD position, a prefixed minus describes the orientation to the right edge of the monitor, e.g. -2 means 2 x 10 = 20 pixels of distance to this edge. When setting a vertical position, a prefixed minus describes the orientation to the bottom edge of the monitor.

If the function **Update Connections** is deactivated, the Extender OSD only appears when switching via OSD.

You have the following possibility to access the menu:

OSD

➔ Select **Configuration > EXT Units** in the main menu.



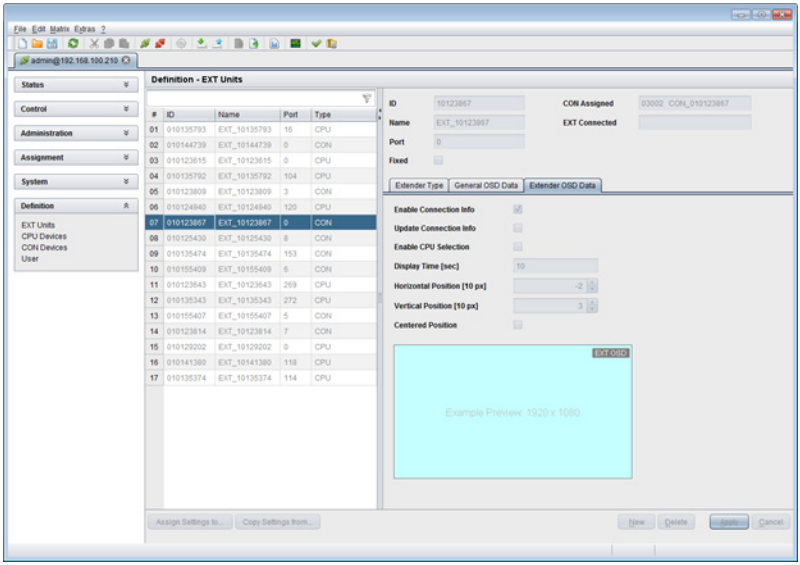
*Menu **Configuration – EXT Units***

In order to change the Extender OSD settings, proceed as follows:

1. Select the console extender in the list **EXT Units** whose Extender OSD settings has to be adjusted.
2. When confirming the selection by pressing the key <Enter>, the respective console extender will be enabled for editing.

Java-Tool

➔ Select **Definition > EXT Units** in the task area.



*Menu **Definition – EXT Units***

In order to change the Extender OSD settings, proceed as follows:

1. Select the console extender in the list **EXT Units** whose Extender OSD settings has to be adjusted.
2. Open the tab **Extender OSD Data**.
3. Adjust the desired settings and confirm your changes by pressing the button **Apply**.

5.8.4 Favorite List Consoles

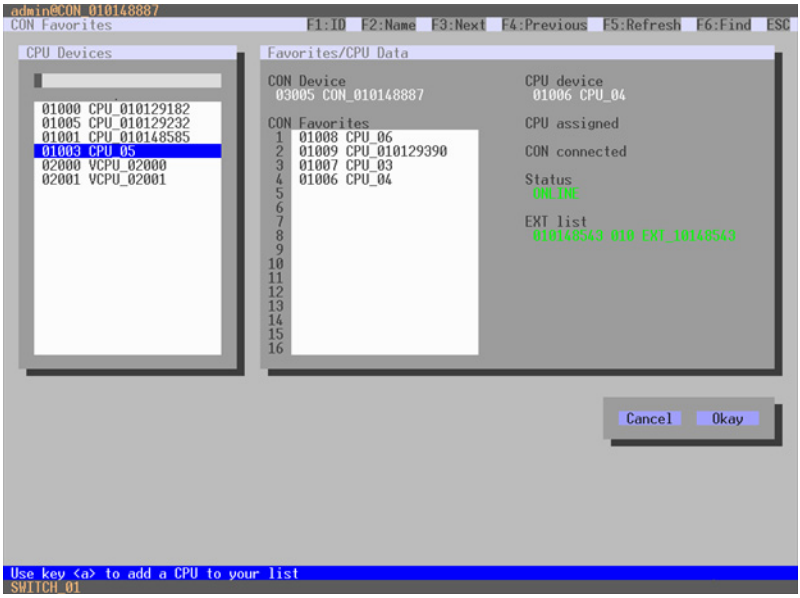
Individual favorite lists of CPUs that have to be switched frequently can be created for all consoles in this menu. A favorite list can contain up to 16 different CPUs.

The switching of the favorites is done via 'Hot Key' using the keyboard (see Chapter 6.1.1, Page 157).

You have the following possibilities to access the menu:

OSD

➔ Select **Assignments > CON Favorites** in the main menu.



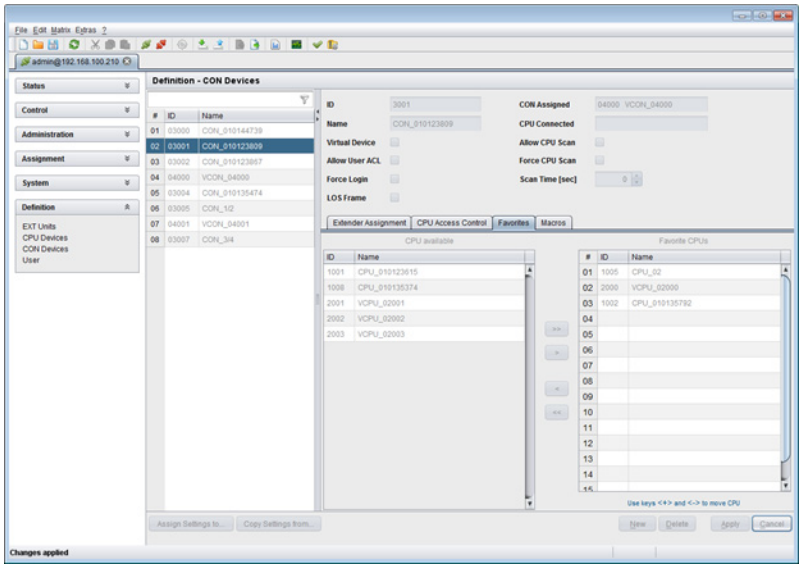
*Menu **Assignments – CON Favorites***

To create a favorite list for your own console, proceed as follows:

1. Select successively these CPUs from the list **CPU Devices** that have to be moved to the favorite list. By pressing the key <a>, a CPU device will be moved to the favorite list and it will be removed by pressing <r>.
2. The order of the CPU devices within the favorite list can be changed by pressing the keys <+> and <->.
3. Press the button **Save** to save the settings.

Java-Tool

➔ Select the respective user in the working area of the menu **CON Devices** for the favorite list and open the tab **Favorites**.



*Menu **Definition – CON Devices***

To create a favorite list for any console, proceed as follows:

1. Select the CPUs in the list **CPU available** that should be added to the favorite list (**CPU assigned**). By pressing the key <Ctrl> at the same time, more than one CPU device can be marked.
2. Press the button **>** to move the marked CPU devices to the favorite list. If you press the button **>>**, the first eight CPU devices from the list **CPU available** will be moved to the favorite list (**CPU assigned**).
3. The order of marked CPU devices within the favorite list can be changed by pressing the keys<+> and <->.
4. To remove marked CPU devices from the favorite list, press the button **<**. If you press the button **<<**, all CPU devices will be removed from the favorite list.

5.8.5 Console Macros

In this menu macro commands for switching, disconnection or user administration can be created. The macro commands are created for each console separately.

A macro can execute up to 16 switching commands successively.

The execution of the macros is done via 'Hot Key' and the function keys <F1>-<F16> (see Chapter 6.1.3, Page 159).

You can select between the following settings:

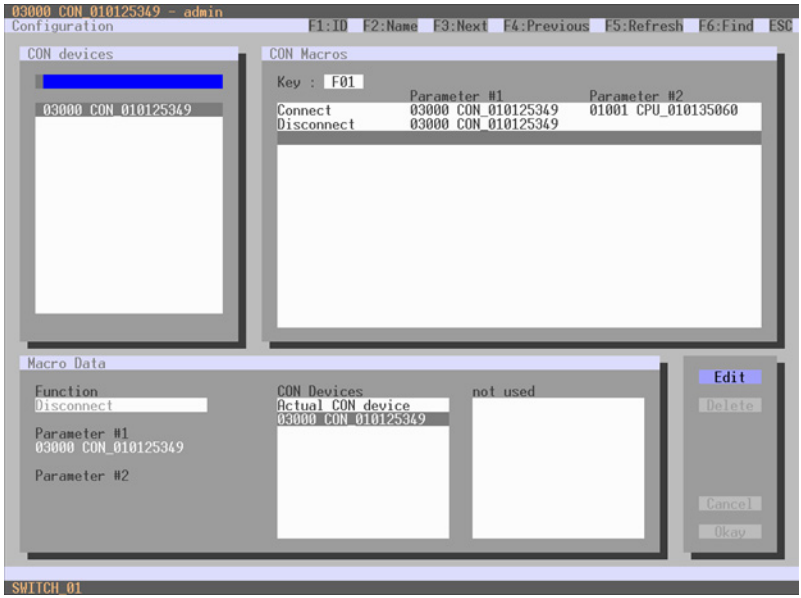
Field	Selection	Description
Function (01–16)	**Connect (P1=CON, P2=CPU)**	Set bidirectional connection from console P1 to CPU P2
	Connect Video (P1=CON, P2= CPU)	Set video connection from console P1 to CPU P2
	Disconnect (P1=CON)	Disconnect console P1
	Logout User	Logout current user
	Set Real CPU (P1=VCPU, P2=RCPU)	Assign a virtual CPU to a real CPU

Field	Selection	Description
	Set Virtual CON (P1=RCON, P2=VCON)	Assign a real console to a virtual console
	Push (P1=CON)	The own KVM connection is forwarded to console P1 and is changed to a video only connection.
	Push Video (P1=CON)	The video signal of the current connection (KVM or video only) is forwarded to console P1. The own connection remains unchanged (KVM or video only).
	Get (P1=CON)	The own console gets a KVM connection to the CPU that is currently connected to console P1. The connection of console P1 is changed into a video only connection.
	Get Video (P1=CON)	The own console gets a video only connection to the CPU that is currently connected to console P1. The connection of console P1 remains unchanged (KVM or video only).
P1	CON or CPU Device	Name of CON or CPU device
P2	CPU or CPU Device	Name of CON or CPU device

You have the following possibilities to access the menu:

OSD

➔ Select via **Configuration > CON Macros** in the main menu that console for which a console macro has to be created.



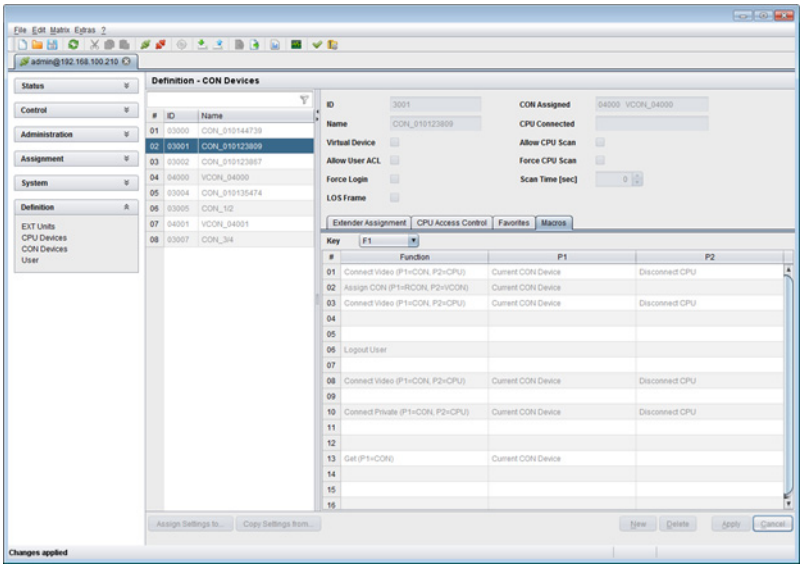
*Menu **Configuration – CON Macros***

In order to create a macro for the selected console, proceed as follows:

1. Select in the field **Key** that one (1-16) for which a macro should be created.
2. Select the respective place on the list (1-16) of the key that should be set with a macro key.
3. Select for the highlighted position on the list a macro command in the field **Macro Data**.
4. Set the necessary parameters **P1** and **P2** (e.g. CON Devices or CPU Devices) for the selected macro command.
5. Confirm your inputs by pressing the key <Enter> and repeat the process for further macro commands, if necessary.

Java-Tool

➔ Select the console in the working area of the menu **Definition > CON Devices** for which a macro has to be created and open the tab **Macros**.



*Menu **Definition – CON Devices***

In order to create a macro for the selected console, proceed as follows:

1. Select in the field **Key** that one (1-16) for which a macro has to be created.
2. Select in the column **Function** the commands that should be part of the macro. The selection list will be opened by a double click on the empty fields.
3. Select the respective parameters for the macro functions (e.g. corresponding consoles and CPUs) in the columns **P1** and **P2**.
4. Confirm your inputs by pressing the button **Apply.**

For an efficient macro configuration the following context functions are available:

➔ When clicking on the tab **Macros**, macros can be assigned to other consoles by using the function **Assign Macros to ...** and can be copied from other consoles by using the function **Copy Macros from ...**.

➔ When clicking on the macro list, macros of the selected key can be copied into the cache by using the function **Copy Key Macros**. You can paste the macros from the cache into a key by using the function **Paste Key Macros** and you can reset all macros of the selected key by using the function **Reset Key Macros**.

5.8.6 Parallel Operation

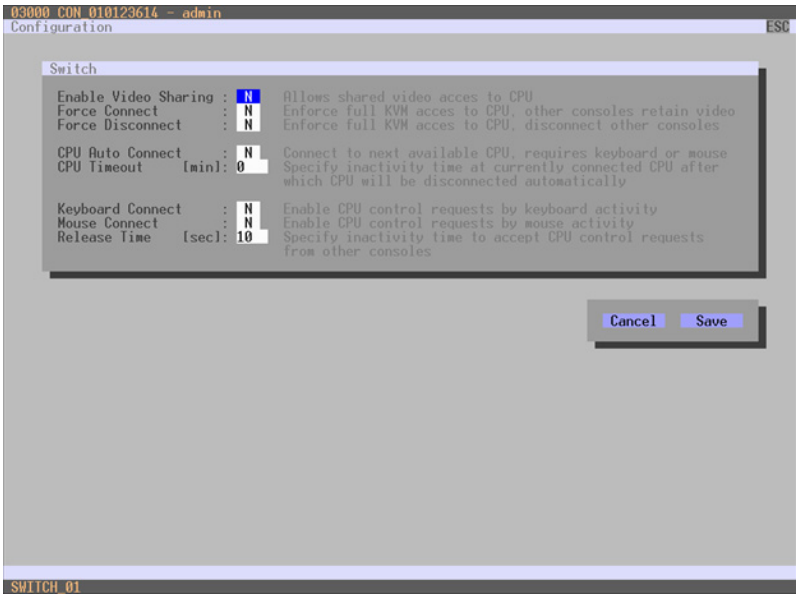
In this chapter you can find an instruction of configuring the parallel operation of a CPU Device by two or more CON Devices. The control of the CPU Device can be done by only one CON Device at a time, but can be taken over exclusively by other CON Devices, too. Taking over control is immediately possible or after the expiry of an inactivity timer of the controlling CON Device. You can use the mouse or keyboard in order to take over control.

In order to allow a smooth and accurate function of the parallel operation, you should use identical mice and keyboards. They should be connected to the same USB-HID ports of each CON Unit.
The alternative is using the USB-HID Ghosting (see Chapter 6.10, Page 177).

You have the following possibilities to configure parallel operation:

OSD

➔ Select **Configuration > Switch** in the main menu.


03000 CON 010123614 - admin
Configuration
ESC
Switch
Enable Video Sharing : N
Force Connect : N
Force Disconnect : N
Allows shared video acces to CPU
Enforce full KVM acces to CPU, other consoles retain video
Enforce full KVM acces to CPU, disconnect other consoles
CPU Auto Connect : N
CPU Timeout [min]: 0
Connect to next available CPU, requires keyboard or mouse
Specify inactivity time at currently connected CPU after which CPU will be disconnected automatically
Keyboard Connect : N
Mouse Connect : N
Release Time [sec]: 10
Enable CPU control requests by keyboard activity
Enable CPU control requests by mouse activity
Specify inactivity time to accept CPU control requests from other consoles
Cancel
Save
SWITCH_01

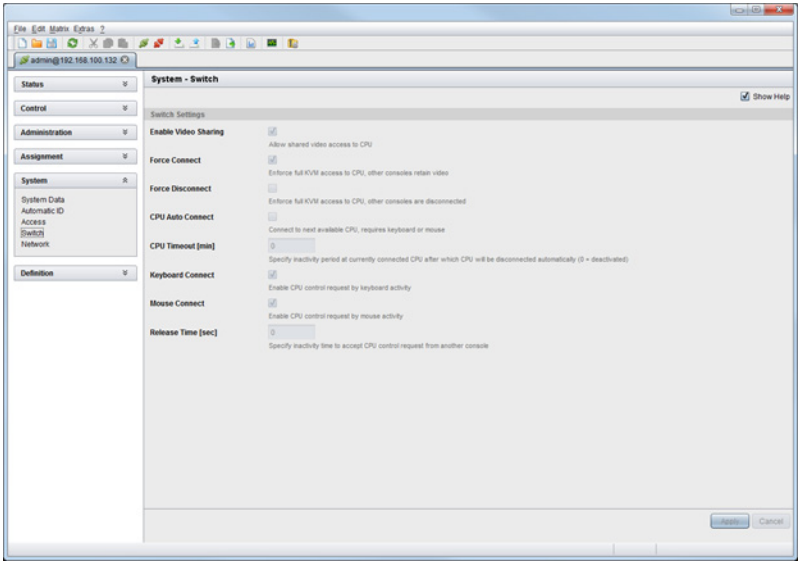
*Menu **Configuration – Switch***

In order to configure parallel operation, proceed as follows:

1. Activate the function **Enable Video Sharing**.
2. Activate the function **Force Connect**.
3. Activate the function **Keyboard Connect**, if taking over control by a keyboard event should be possible.
4. Activate the function **Mouse Connect**, if taking over control by a keyboard movement should be possible.
5. Define a **Release Time** of inactivity (0 - 999 sec.) after that control can be taken over.

Java-Tool

➔ Select **System > Switch** in the task area.



*Menu **System – Switch***

In order to configure parallel operation, proceed as follows:

1. Activate the function **Enable Video Sharing**.
2. Activate the function **Force Connect**.
3. Activate the function **Keyboard Connect**, if taking over control by a keyboard event should be possible.
4. Activate the function **Mouse Connect**, if taking over control by a keyboard movement should be possible.
5. Define a **Release Time** of inactivity (0 - 999 sec.) after that control can be taken over.

5.8.7 Multi-Screen Control

In this menu switching of USB-HID to control several connected sources (computer, CPU) by a CON device with several monitors can be configured. The switching can be performed for up to four connected sources (computer, CPU) and is made smoothly by crossing the mouse pointer beyond the respective monitor to the next one.

Thereby, the monitors can be arranged in sequence or as a square.

When using sources (computers, CPUs) in multi-head operation (e.g. dual-head), the switching is only working manually via keyboard commands. Any non-observance may have a negative influence on the stability of the system.

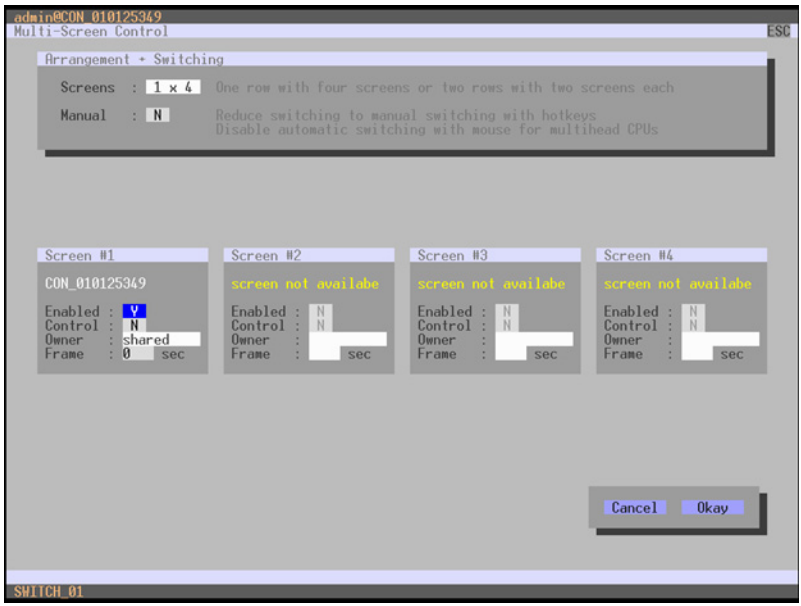
In order to enable Multi-Screen Control, all Extender Units assigned to the related CON device, have to be physically connected to the same block of 4 ports on the I/O board of the matrix.

CON Units that have been already configured for Multi-Screen Control can be connected together to other blocks of 4 ports. In this case any further configuration is not necessary. The functionality will be still available.

You have the following possibilities to access the menu:

OSD

➔ Select **Assignments > Multi-Screen Control** in the main menu.



*Menu **Assignments – Multi-Screen Control***

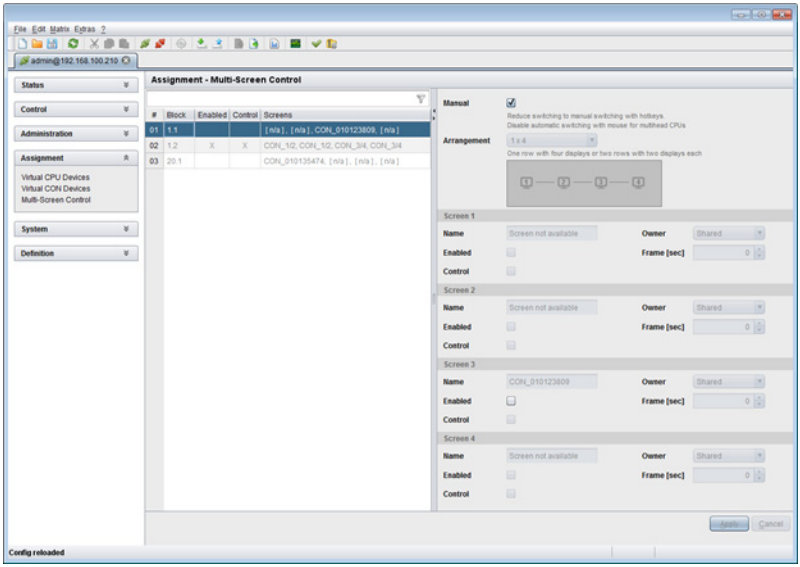
In order to configure the Multi-Screen Control, proceed as follows:

1. Select in the field **Arrangement** the respective display arrangement that is available at the CON Device you want to configure (**1 x 4** or **2 x 2**).
   The fields for the configuration of the individual displays will be arranged accordingly.
2. Activate the option **Manual**, if the USB-HID switching should only be allowed by using keyboard commands (see Chapter 6.7, Page 173). The manual switching allows the use of multi-head consoles.
3. Ensure that the option **Enabled** is set to **Y** on all used displays in order to activate the respective display for the use of the Multi-Screen Control.

4. Select one or more control displays within the CON Device by setting the function **Control** auf **Y** in the respective display field.
   Control displays are referred to the extender units within the Multi-Screen Control that are connected to keyboard and mouse.
5. When using the function **Owner**, you can determine which control display is permitted for USB-HID switching to the different displays. Select that display from the list.
   In order to make a display accessible for all neighboring control displays, set the function **Owner** to **shared**.
6. Use the function **Frame** to configure a red frame that shows the current display with mouse control after the expiration of a selectable timer.
   The frame to fade in can be individually activated by using a timer >0 seconds.

Java-Tool

➔ Select **Assignment > Multi-Screen Control** in the main menu.



*Menu **Assignment – Multi-Screen Control***

In order to configure the Multi-Screen Control, proceed as follows:

1. Select that block of 4 ports in the list of the working area which should be configured for Multi-Screen Control.
   There are only shown these blocks of 4 ports that contain at least one CON Unit.
2. Activate the option **Manual**, if the USB-HID switching should only be allowed by using keyboard commands (see Chapter 6.7, Page 173). The manual switching allows the use of multi-head consoles.
3. Select in the field **Arrangement** the respective display arrangement that is available at the CON Device you want to configure (**1 x 4** or **2 x 2**).
   The fields for the configuration of the individual displays will be arranged accordingly.
4. Select one or more control displays within the CON Device by setting the function **Control** auf **Y** in the respective display field.
   Control displays are referred to the extender units within the Multi-Screen Control that are connected to keyboard and mouse.
5. When using the function **Owner**, you can determine which control display is permitted for USB-HID switching to the different displays. Select that display from the list.
   In order to make a display accessible for all neighboring control displays, set the function **Owner** to **shared**.
6. Use the function **Frame** to configure a red frame that shows the current display with mouse control after the expiration of a selectable timer.
   The frame to fade in can be individually activated by using a timer >0 seconds.

5.9 Saving and Loading of Configurations

You have the possibility to set the following administration of configurations:

5.9.1 Active Configuration

You have the following possibility to access the menu:

➔ Select **Configuration > Save** in the main menu.

By selecting this menu item, the active configuration of the matrix is saved to the permanent matrix memory. By default, the last configuration that has been saved in this way will be restored after a restart of the matrix.

Changing configurations or saving them blocks the matrix memory and leads to a freeze of all OSD menus for a few seconds. The switching connections are not affected by this freeze.

If you select **Auto Save** within the system settings an additional automatic saving of the configuration will be performed periodically (see Chapter 5.3.2, Page 72).

5.9.2 Saving of Configurations (internal)

In this menu the current matrix configuration to predefined storage locations is saved. However, it does not replace the buffering of configuration (see Chapter 5.9.1, Page 139).

You have the following possibilities to access the menu:

In **Active**, the name and detailed information of the current configuration are shown. This configuration can be saved now.

In **Default** and **File #1** to **File #8**, the name and the detailed information of the respective saved configuration are shown. These storage locations can be overwritten.

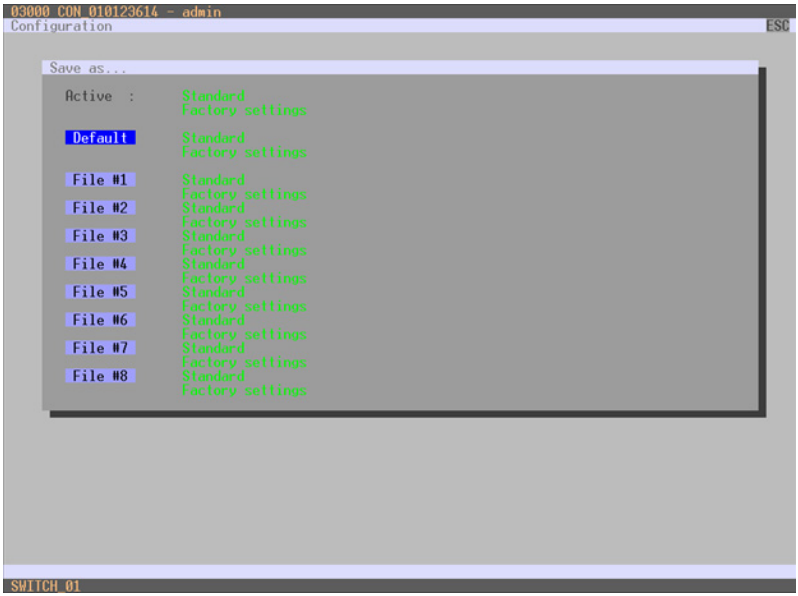
The storage location that has to be overwritten by the current configuration must be selected explicitly.

Afterwards the current configuration will be saved to this storage location and will be immediately shown in the menu. The previously saved configuration that has been saved to this storage location is deleted.

OSD

You have the possibility to save the created configuration within eight storage locations in the matrix (**File #1** – **File #8**). Additionally a configuration can also be saved as default configuration.

1. Select **Configuration > Save As…** in the main menu.
2. Select the required storage location (**File #1** – **File #8**) or **Default**.

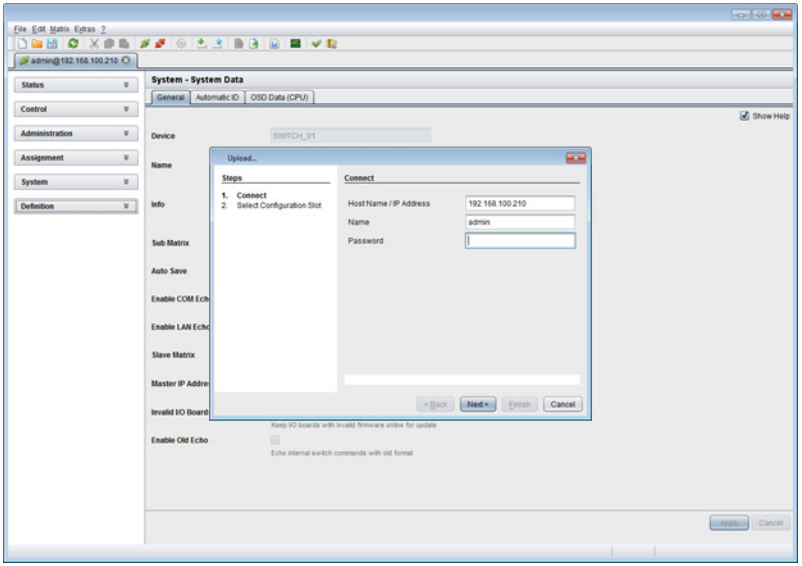


*Menu **Configuration – Save as***

Java Tool

To save the configuration into the internal matrix memory, proceed as follows:

1. Select **File > Upload** in the menu bar.
2. Enter the IP address of the matrix, your user name and your password and confirm your inputs with the button **Next**.
3. Select the storage location in that the configuration has to be saved (**default** or **config01** – **config08**) and confirm with the button **OK**.



*Menu **File – Upload***

5.9.3 Loading of Configurations (internal)

Previously saved configurations are loaded in this menu.

You have the following possibilities to load configurations from files:

In **Active**, the currently loaded configuration is displayed.

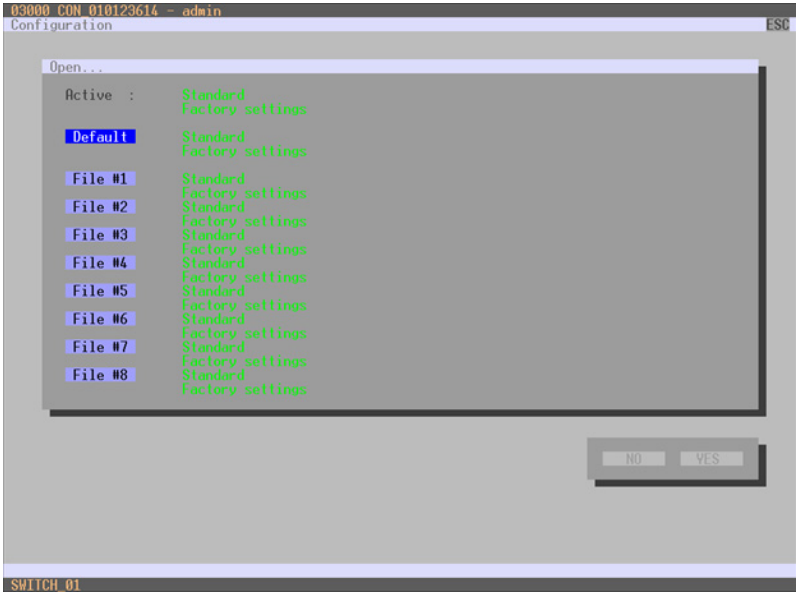
In addition to the default configuration, up to eight further configurations can be loaded.

The selection of the configuration that has to be loaded can be made between eight personalizable configurations and the default settings.

The selected configuration is will be immediately loaded and displayed in the menu as **Active**. The previously active configuration is deleted.

OSD

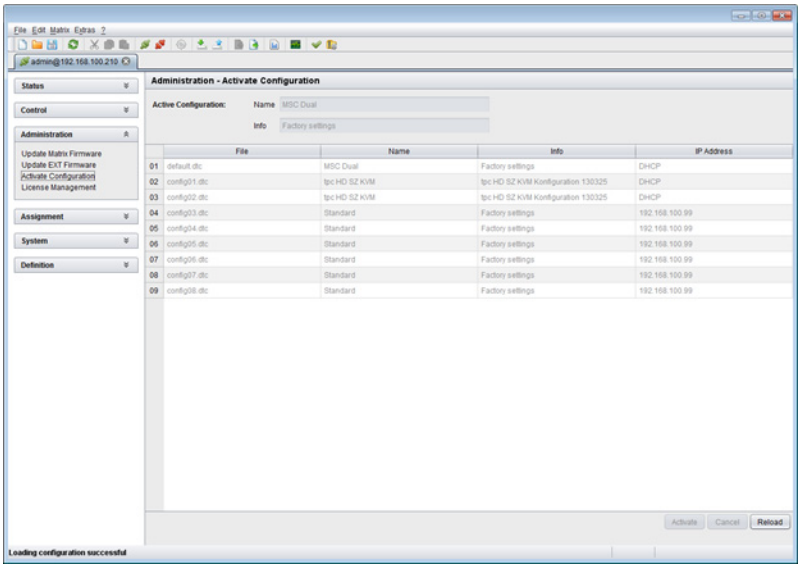
1. Select **Configuration > Open** in the main menu.
2. Select the desired configuration.
3. Load the configuration by pressing the key <Enter>.



*Menu **Configuration – Open...***

Java Tool

1. Select **Administration > Activate Configuration** during online-mode in the task area
2. Select the required configuration.
3. Load the configuration by pressing the button **Activate**.



*Menu **Administration – Activate Configuration***

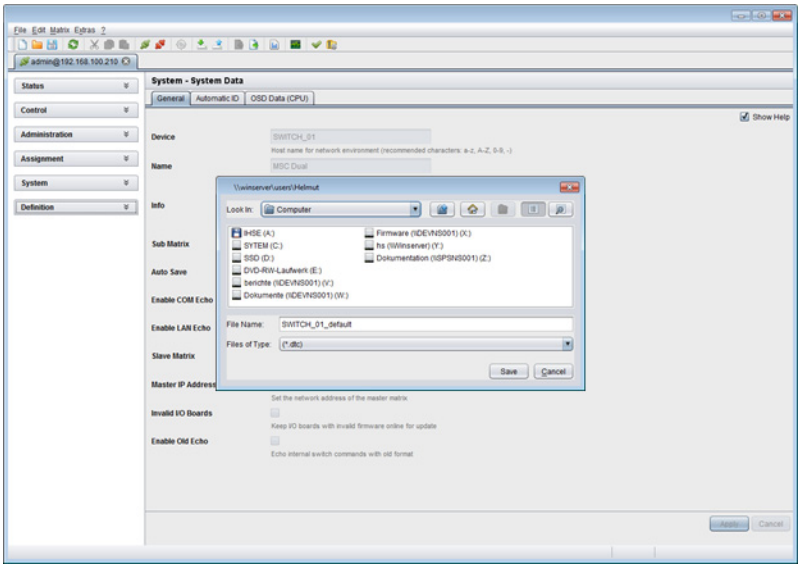
5.9.4 Saving of Configurations (external)

Created configurations can be saved as a file and so become independent of the matrix and transportable.

You have the following possibility to access the menu:

1. Select **File > Save As** in the menu bar.
2. Enter a name for the configuration.
3. Select the directory of the configuration on your storage medium where it has to be saved.

Configurations are always saved in a file with the ending dtc.



*Menu **File – Save As***

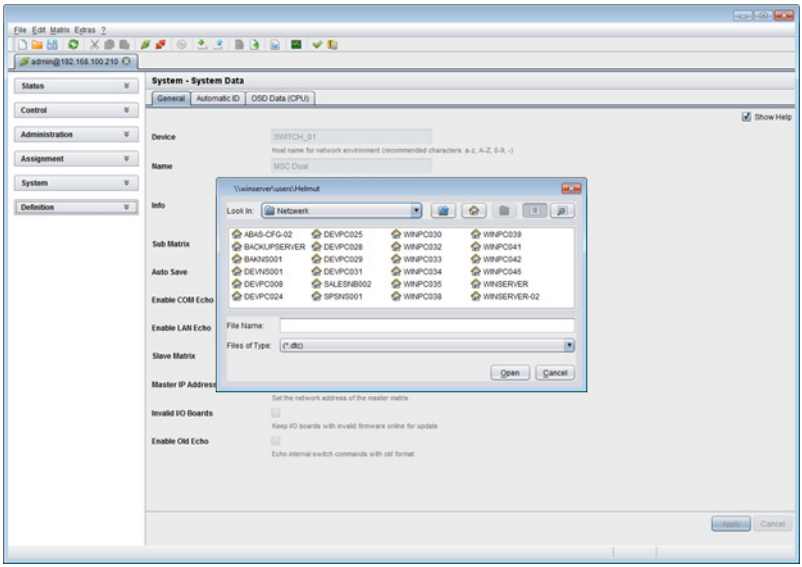
5.9.5 Loading of Configurations (external)

Externally saved configurations are opened and activated in this menu.

You have the following possibilities to load configurations from files:

1. Select **File > Open…** during offline-mode and select the storage location of the configuration file that has to be opened.
2. Open the configuration by pressing the button **Open**.
3. Select **File > Upload** in the menu bar to transfer the opened configuration to the matrix. Enter the necessary parameters.
4. Select **Matrix > Connect** in the menu bar to make a connection between the matrix and the Java tool. Enter the necessary parameters.
5. Select **Administration > Activate Configuration** and select the configuration that has to be activated.
6. Confirm the process with the button **Activate**.

The opened configuration is activated and can be used now.



*Menu **File – Open…***

5.10 Export and Import Options

The Draco tera offers the possibility to read out available configuration lists (extender, CPUs, consoles and users) for exporting and importing again via Java tool. You have the following possibilities to handle configuration lists.

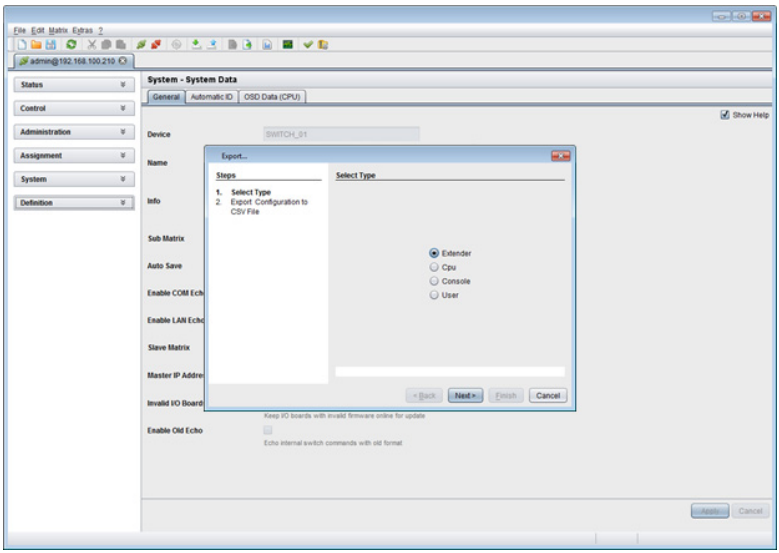
Exported configuration lists are always saved in .csv format that allows offline editing with common spreadsheet applications.

You have the following possibilities to export or import configuration lists:

5.10.1 Export Options

Configuration lists are exported in this menu. To export, proceed as follows:

1. Select **File > Export** in the menu bar.
2. After opening the menu, select the list to export (**Extender, CPU, Console** or **User**).
3. Select the storage location for the export file.
4. Confirm the export with the button **Finish**.

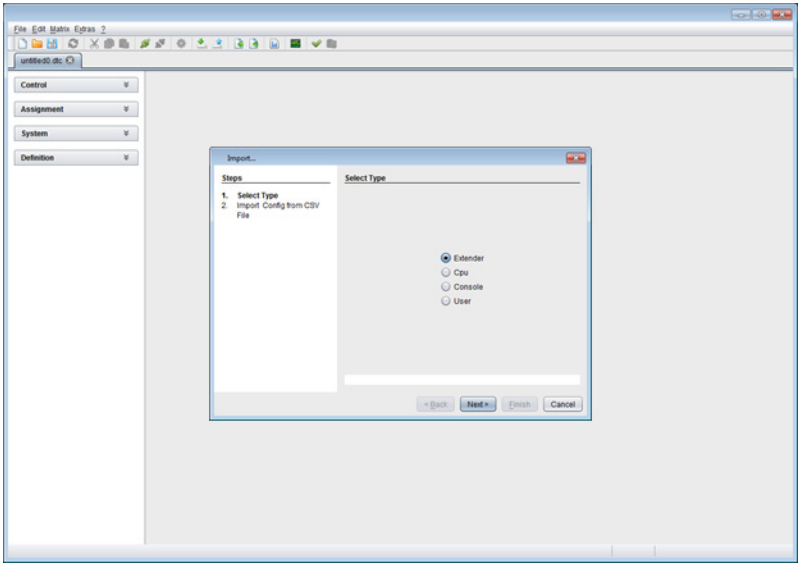


*Menu **File – Export***

5.10.2 Import Options

Configuration lists are imported in this menu. To import, proceed as follows:

1. Select **File > Import** in the menu bar.
2. After opening the menu, select the list to import (**Extender, CPU, Console** or **User**).
3. Select the directory of the list to import.
4. Confirm the import with the button **Finish**.



*Menu **File – Import...***

5.11 Firmware Update

5.11.1 Matrix Update

The firmware of the matrix can be updated in this menu.

You have the following possibility to access the menu:

Java Tool

Only use computers to update the matrix that are self-sustaining and not integrated in the KVM extender / matrix setup.

Ensure that the computer used for the update is not set into stand by mode or sleep mode during the update.

Ensure that your configuration has been saved externally before you will start the update.

For reasons of network stability, an update via WLAN is not recommended.

Preparation

Take the following steps in order to be prepared for the matrix update:

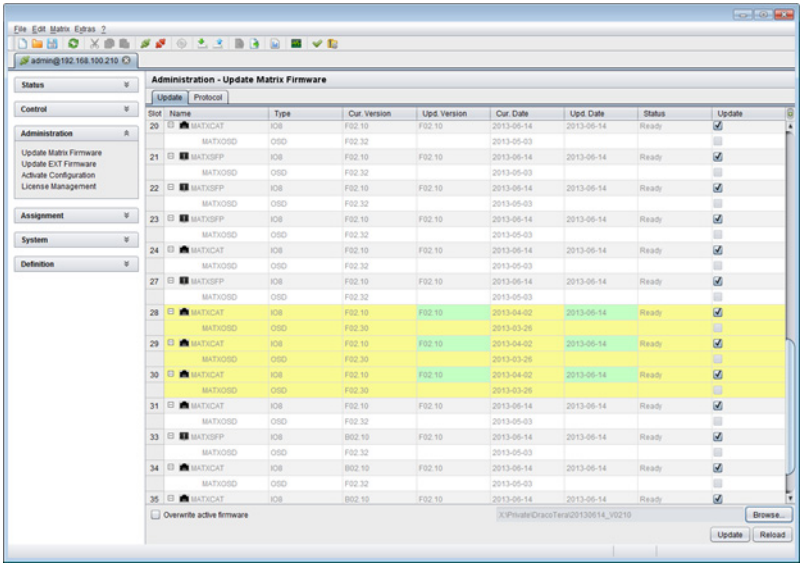
1. Save the matrix configuration externally (see Chapter 5.9.4, Page 144).
2. Open **Extras > Options** in the menu bar and insert in the setting **Firmware Directory** the directory from which the update files should be standardly sourced.
3. Put all hot spare boards into the matrix.
4. Activate the Syslog function (see Chapter 3.9, Page 38) for the monitoring of the update, if unlocked via license key.

Ensure implicitly that all USB 2.0 extenders are only connected to the provided ports (fixed ports) before you start the matrix update. A non-observance will have a negative influence on the stability of the update.

Performing the Update

Take the following steps in order to be prepared for the matrix update:

1. Select **Administration > Update Matrix Firmware** in the task area. All updateable components of the matrix will be automatically selected and highlighted in green.



*Menu **Administration – Update Matrix Firmware***

2. Start the update by pressing the button **Update** in the appearing pop up window.
3. Restart the Matrix after the update by pressing the button **Restart matrix** in the lower part of the working area.

For a safe initialisation of the matrix, a cold start (power cycle) is recommended.

5.11.2 Extender Update

The firmware of the extenders connected to the matrix can be updated in this menu.

You have the following possibilities to access the menu:

Preparation

Take the following steps in order to be prepared for the extender update:

1. Save the matrix configuration externally (see Chapter 5.9.4, Page 144).

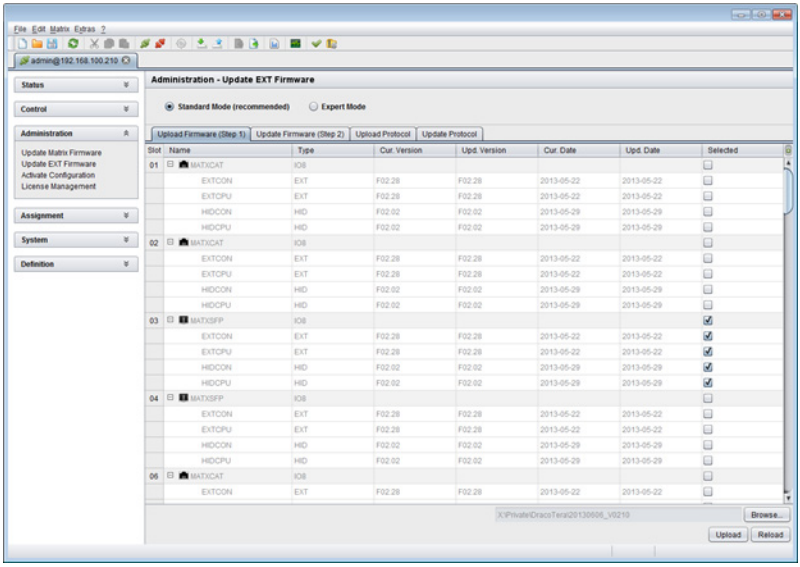
   Open **Extras > Options** in the menu bar and insert in the setting **Firmware Directory** the directory from which the update files should be standardly sourced.

2. Connect all hot spare extenders to the matrix.

For reasons of network stability, an update via WLAN is not recommended.

Performing the Update in Standard Mode (parallel Update)

1. Select **Administration > Update EXT Firmware** in the task area. The standard mode for the parallel update will be selected by default and the tab **Upload Firmware** will be opened.



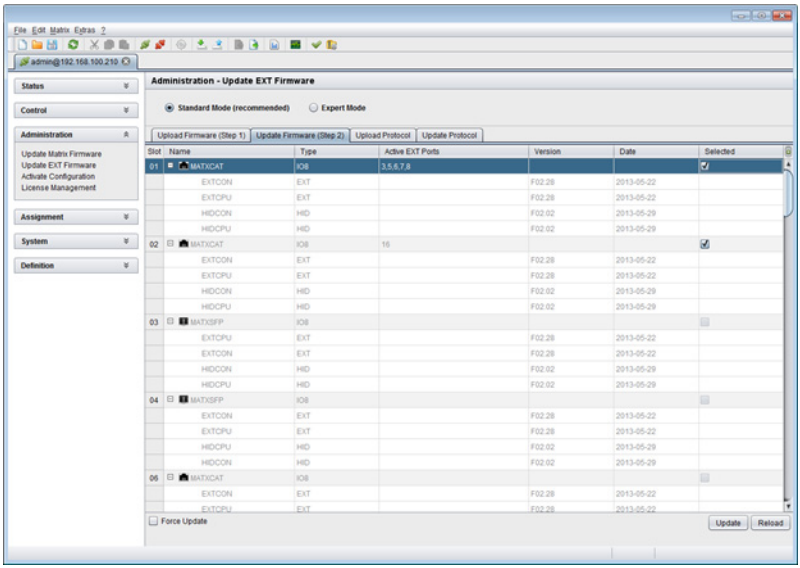
*Menu **Administration – Update EXT Firmware***

2. Before the actual update process, all firmware files have to be uploaded to the respective I/O boards on that extenders will have to be updated. By selecting the update files, the I/O boards will be automatically chosen for the upload in the column **Selected** and highlighted in green, but only if a newer firmware version is selected.
3. Start the upload and distribution of the update files by pressing the button **Upload**.

By performing the upload process, no update files will be installed. the update process can be performed at a later time.
If there are not selected all I/O cards, the upload of the update files will be performed in sequence.

4. After finishing the upload process the successful completion will be confirmed by a popup. If you want to directly start the actual update process, you will have to confirm this by pressing the button **Yes**. You will be immediately forwarded to the tab **Update Firmware**.

When updating an identical or an older firmware version as the version that is currently installed, the option **Force Update** in the lower part of the working area has to be enabled.



*Menu **Administration – Update EXT Firmware***

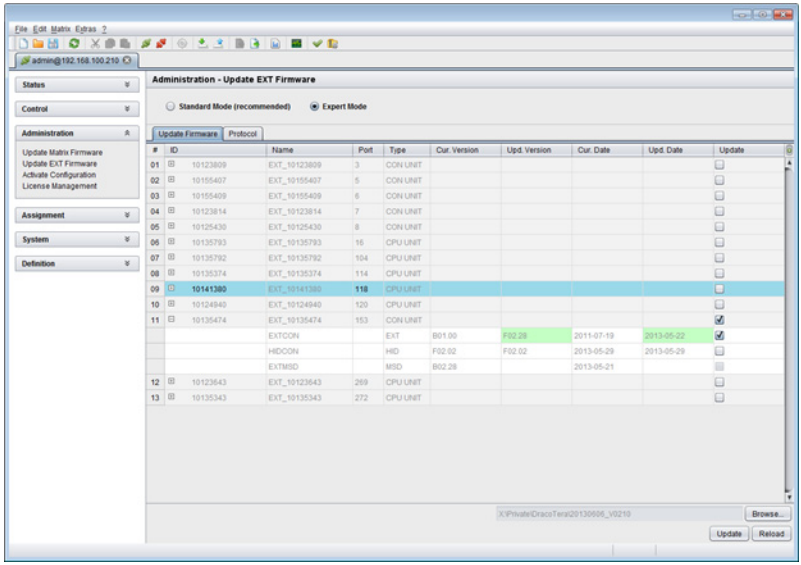
5. Start the actual update process by pressing the button **Update**.

Just before the update process, all affected I/O boards will be set into **Service Mode** and retrieved gradually after finishing the respective updates.

Performing the Update in Expert Mode (sequential Update)

Take the following steps in order to be prepared for the extender update:

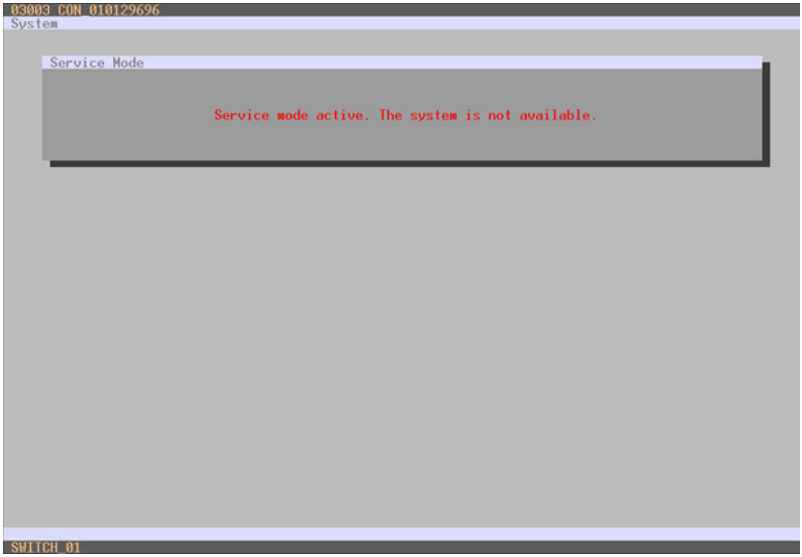
1. Select **Administration > Update EXT Firmware** and select **Expert Mode** in the upper part of the working area. All updateable extenders will be automatically selected and highlights in green.



*Menu **Administration – Update EXT Firmware***

2. Set the matrix into Service Mode upon request in the popup window or via **Matrix > Activate Service Mode** in the menu bar.

   During activation, all matrix functions are disabled on the I/O boards on which an update is currently performed. An OSD picture indicates the activation of the Service Mode and is displayed on all monitors that are connected to the matrix via a CON device. Additionally, the Service Mode is indicated by a red tool icon in the lower part of the working area.



*OSD View **Service Mode***

3. Start the update by pressing the button **Update** in the lower part of the working area.
4. Quit Service Mode after updating upon request in the popup window or via **Matrix > Deactivate Service Mode** in the task area.
5. Verify after the update in the Java tool via **Administration > Update EXT Firmware** in the tab **Protocol** of the **Expert Mode**, if the updates for all extenders have been installed correctly.

5.12 License Management

In this menu the matrix can be upgraded with new function bundles by using license keys.

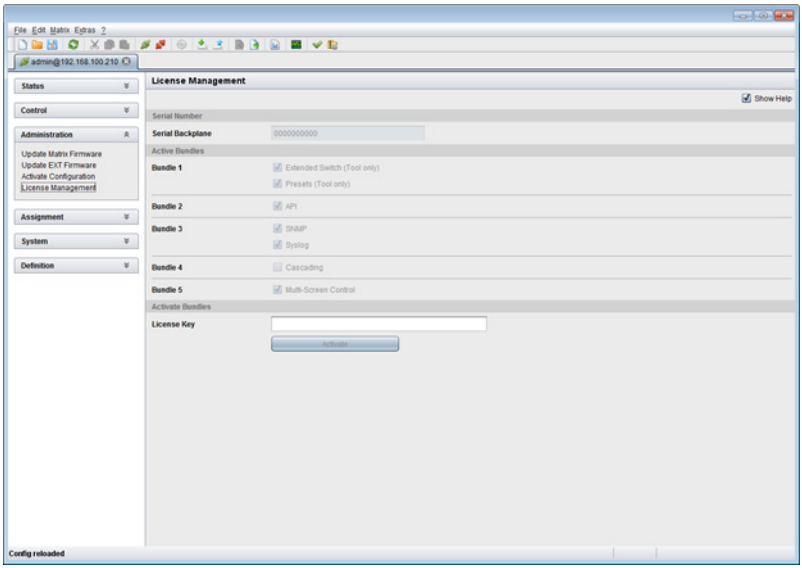
In order to get license keys to upgrade matrix functions, contact your distributor.

You have the following possibility to access the menu:

Java Tool

In order to activate a function bundle, proceed as follows:

1. Select **Administration > License Management** in the task area.



*Menu **Administration – License Management***

2. Enter your license key in the working area under **Activate Bundles** in the field **License Key**.
3. In order to activate the license key press the button **Activate**. The new functions will be immediately enabled, a restart of the matrix will not be necessary.

6 Operation

The Draco tera can be operated in three different ways:

1. Direct Switching

- via a keyboard connected to a CON port and the favorites
- by a macro keyboard connected to a console port

2. OSD

- via keyboard/mouse directly connected to the CPU board of the matrix
- via keyboard/mouse connected to a CON Unit and the OSD

3. External Switching Commands:

- via an external computer via Java tool (network connection required)
- via a media control (network or serial connection required)

6.1 Operation via 'Hot Keys'

6.1.1 Direct Switching

The direct switching by favorites on a keyboard is the fastest possibility for a user to switch at his console between different CPUs. There is a possibility to switch video, keyboard and mouse or only video.

Direct Switching of Video, Keyboard and Mouse

1. Start Command Mode with the 'Hot Key'.

   For control, the LEDs **Shift** and **Scroll** flash at the keyboard, if Command Mode is activated.

2. Enter the index number of the new CPU from the list of favorites and confirm with <Enter>.

   At the same time the Command Mode is closed and the console is connected to the new CPU with complete control.

Example: Switching to favourite CPU 7 with video, keyboard and mouse

<left Shift>, <left Shift>, <7>, <Enter>

Best results regarding switching time can be achieved by using identical mice, keyboards and monitors. This contributes to a smooth and seamless direct switching of the matrix.

Switching in Private Mode

1. Start Command Mode with the 'Hot Key'.

   For control, the LEDs **Shift** and **Scroll** flashes at the keyboard, if command mode is activated.

2. Enter the index number of the new CPU from the list of favorites and confirm with <left Shift>, <Enter> pressed at the same time.

   At the same time the Command Mode is closed and the console is connected to the new CPU with complete control in **Private Mode**.

Example: Switching to favorite CPU 3 in **Private Mode**

<left Shift>, <left Shift>, <3>, <left Shift>, <Enter>

Direct Switching of Video

1. Start Command Mode with the 'Hot Key'.

   For control, the LEDs **Shift** and **Scroll** flashes at the keyboard, if command mode is activated.

2. Enter the index number of the new CPU from the list of favorites and confirm with <Space>.

   At the same time the Command Mode is closed and the console is connected to the new CPU with video only.

Example: Switching to favourite CPU 1 with video only

<left Shift>, <left Shift>, <1>, <Space>

Switch to previous CPU

1. Start Command Mode with the 'Hot Key'.

   For control, the LEDs **Shift** and **Scroll** flash at the keyboard, if Command Mode is activated.

2. Press the key <p> of your keyboard.

   At the same time the Command Mode is closed and the console is connected to the previous CPU with complete control.

If you switch to a previous CPU that was connected with Video Access before, you will be connected to this CPU with full KVM access.

You can only switch to not used and allowed CPUs with the 'Hot Keys'. The options **Force Connect** and **Force Disconnect** as well as the restrictions of the User ACL and CON ACL are taken into account. 'Hot Keys' are only supported, if neither **Enable User Login** nor the **Enable User ACL** is selected and the user is logged in the OSD.

Disconnect current Connection

1. Start Command Mode with the 'Hot Key'.
   For control, the LEDs **Shift** and **Scroll** flash at the keyboard, if Command Mode is activated.

2. Press the key <Backspace> of your keyboard.
   The Command Mode is closed and the console is disconnected from the previous connected CPU.

6.1.2 Scan Mode

The Scan Mode offers the possibility to show video signals of the different CPU favorites fast and without delay and offers switching in between without continuously using the 'Hot Key'. The switching between two video signals can even take place within one frame.

1. Start command mode with the 'Hot Key'. For control, the LEDs **Shift** and **Scroll** flashes at the keyboard, if command mode is activated.
2. Press the key <Left Shift> and hold it down. You can now enter the index numbers of the various CPUs from the list of favorites with the keyboard and immediately switch to the video signal of the respective CPU after entering the index number.
3. Leave Scan Mode by pressing <Left Shift> + <Esc>.

Optimal results can be achieved by the use of as identical resolutions as possible. This contributes to a smooth and seamless function of the scan mode.

6.1.3 Function Keys <F1>–<F16>

In Command Mode you can retrieve the macros 1–16 with the function keys <F1>–<F16> of the connected standard keyboard instead of the special macro keyboard.

The deposited command sequence for the appropriate function key is executed and Command Mode is left immediately.

Regarding macros there is no necessity of using the key <Enter> for confirmation.

6.1.4 Addressing of Main and Sub Matrices

The Draco tera can be cascaded in two steps. You can optionally send the commands (including opening the OSD) to the main or the sub matrix.

Whenever command mode is activated, you can select by a <m> or a <s>, if all of the following commands should be handled in the main or in the sub matrix.

OSD Access

- OSD access to the main matrix:

  <Left Shift>, <Left Shift>, <m> (optional), <o>
- OSD access to the sub matrix:

  <Left Shift>, <Left Shift>, <s>, <o>

Example: Switching to the CPU port 23 of the sub matrix.

1. Switching to the CPU Port (e.g. 12) of the master matrix that have the connection to the sub matrix:
   <Left Shift>, <Left Shift>, <1>, <2>, <Enter>
2. Switching to the CPU Port 23 of the sub matrix:
   <Left Shift>, <Left Shift>, <s>, <2>, <3>, <Enter>

The selected main matrix / sub matrix mode is permanently activated until the other mode will be manually activated. This means that if you select <s> for example, all prospective commands will be sent to the slave, but not if the Command Mode is left in the meantime.

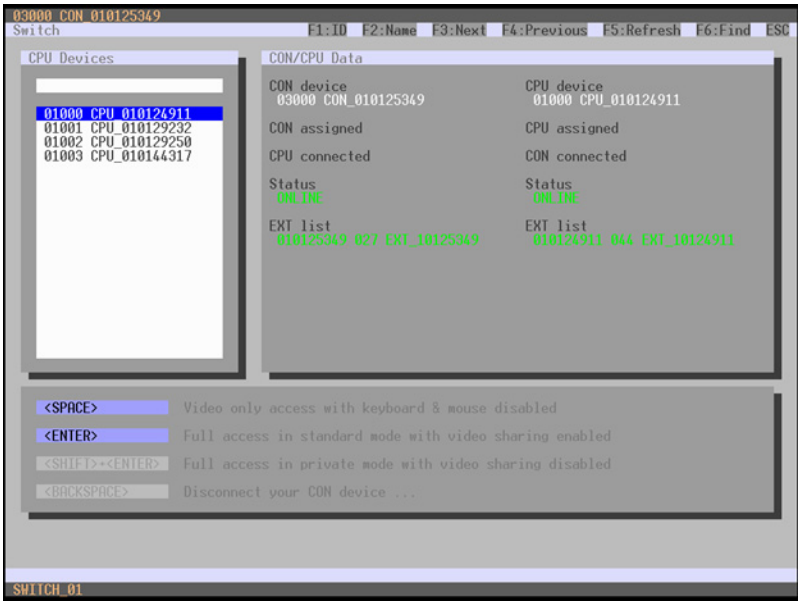
6.2 KVM-Switching

You have the following possibilities to perform switching operations with the Draco tera:

OSD

➔ Select **Switch** in the main menu.

By pressing the key <F8>, inactive CPU devices can be hidden in order to ensure a better overview.



*Menu **Switch***

To switch the own console to any available CPU, proceed as follows:

1. Select in the list **CPU Devices** on the left side that one that should be connected to the own CON device.
2. Confirm with the respective keyboard command according to the desired connection type.

Switching operations from the own CON device can only be done to CPU devices that are available in the list **CPU Devices**.

Listed CPU devices highlighted in red color are currently connected in Private Mode and are blocked by the connected CON device.

Switching via Selection List for CPU Devices

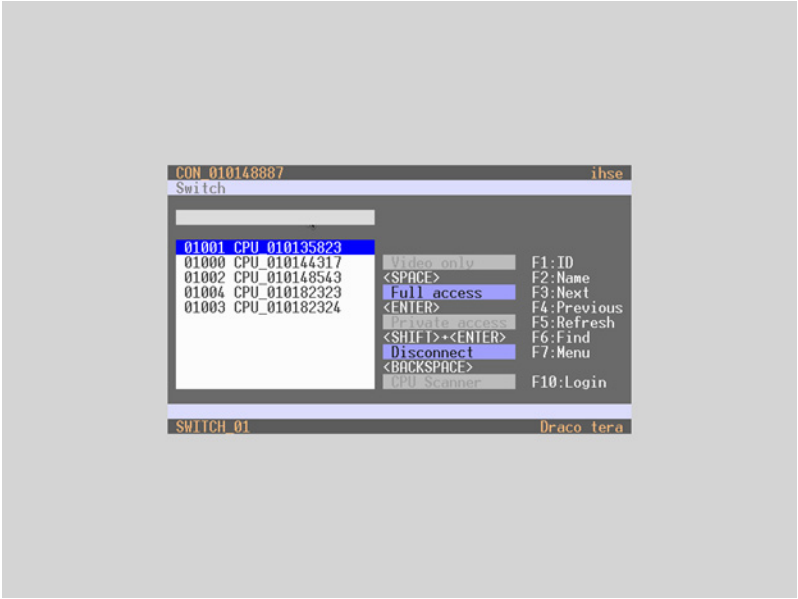
The matrix offers the possibility to execute KVM switching operations by a selection list for CPU devices next to the OSD in full screen.

In order to use the selection list for CPU Devices, proceed as follows:

1. Activate the option **Enable CPU Selection** in the menu **Configuration** for those consoles where the selection list for CPU devices should be available.
2. Execute the key sequence for opening the OSD. The selection list immediately appears in the preset position of the extender OSD.

By pressing the key <F8>, inactive CPU Devices can be hidden to ensure a better overview.

3. Execute the desired switching operation by pressing the respective key (see Chapter 6.3, Page 164).
   In order to not execute a switching operation and access OSD, press the key <F7>.
   In order to close the selection list, press the key <Esc>.



*Example view **Selection list CPU Devices***

Activating the automatical Scan Mode for CPU Devices

The matrix offers the possibility to use a scan mode based on the favorite list of each console or user. The scan mode allows the matrix to switch in sequence between the CPU Devices in the favorite list within a predefined time. All scans are performed in video only mode.

For a configuration of the scan mode, Chapter 5.8.1, Page 115.

You have the following possibility to activate the scan mode:

In order to activate the scan mode, proceed as follows:

1. Define a favorite list for the respective CON Device or user (see Chapter 5.8.4, Page 126 for CON Devices or see Chapter 5.5.2, Page 100 for users)
2. Start Command Mode with the 'Hot Key' and press <o> to open OSD.
3. Select in the CPU selection list one of the CPU Devices that are defined in your favorite list.

4. Confirm your selection by pressing the button **CPU Scanner**. The scan will automatically start.
5. If you have enabled the option **Force CPU Scan**, the scan will automatically start after switching the respective CON Device to any CPU Device from the favorite list without the need to press the button **CPU Scanner**.

6.3 Extended Switching

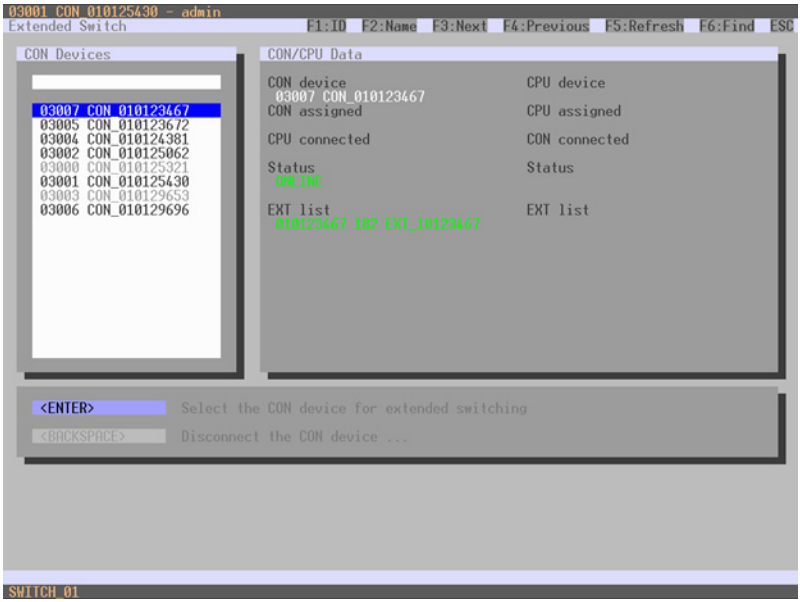
You have the following possibilities to perform switching operation with the Draco tera:

OSD

To switch any console to any available CPU, proceed as follows:

➔ Select **Extended Switch** in the main menu.

By pressing the key <F8>, inactive CPU Devices can be hidden to ensure a better overview.



*Menu **Extended Switch***

1. Select in the list **CON Devices** on the left side that one that should be switched to a CPU device and open it by pressing <Enter>.
2. Select in the list **CPU Devices** on the left side that one that should be connected to the open CON device.
3. Confirm with the respective keyboard command according to the desired connection type.

Switching operations from the own CON device can only be done to CPU devices that are available in the list **CPU Devices**.

The following information is shown in this menu:

Field	Description
CON device	Assigned physical extender unit (CON unit)
CON assigned	Virtual CON Device that is assigned to the real CON device
CPU connected	Currently connected CPU device
CON status	Current connection status (CON device)
EXT list	List of all available physical extender units (CON units)
CPU device	Assigned physical extender unit (CPU unit)
CPU assigned	Real CPU device that is assigned to a virtual CPU device
CON connected	Currently connected CON device
CPU status	Current connection status (CPU device)
EXT list	List of all available physical extender units (CPU units)

You can select between the following switching functions:

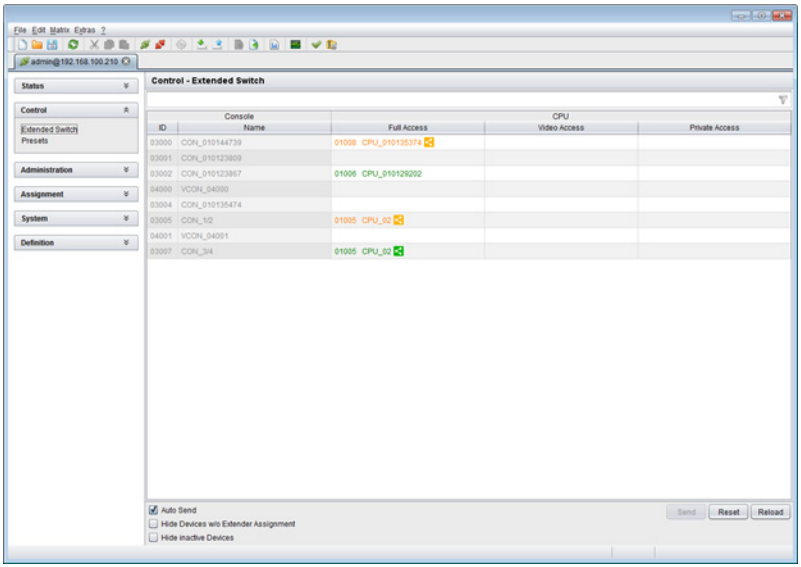
Function	Keyboard Command
Set a video only connection.	<Space>
Set a KVM connection.	<Enter>
Set a KVM connection in private mode (video sharing disabled).	<Shift> + <Enter>
Disconnect own CON device from CPU device.	<Backspace>

Java Tool

You have two possibilities to perform switching operations for the Draco tera via Java Tool:

Possibility 1:

➔ Select **Control > Extended Switch** in the task area.



*Menu **Control – Extended Switch***

All connected consoles and the associated CPU connections are shown in columns in the working area in this menu.

Switching operations can only be performed in online mode. That means an active network connection between the matrix and the Java Tool is required.

➔ In order to set a **KVM connection** between a console and a CPU, double-click on the corresponding selection box within the column **Full Access** and select the requested CPU.

➔ In order to set a **video connection** between a console and a CPU, double-click on the corresponding selection box within the column **Video Only** and select the requested CPU.

➔ In order to set a **Private Mode** connection between a console and a CPU, double-click on the corresponding selection box within the column **Private Mode** and select the requested CPU.

CPUs whose respective console does not have access rights, will not appear in the list.

The following symbols are shown in the connection overview:

Symbol	Description
	CON device is connected via **Shared Access** with at least one further console to the same CPU. The CON device has Full Access at the moment.
	CON device is connected via **Shared Access** with at least one further console to the same CPU. The CON device has a Video Access connection at the moment.

You can use the following button to perform a switching operation:

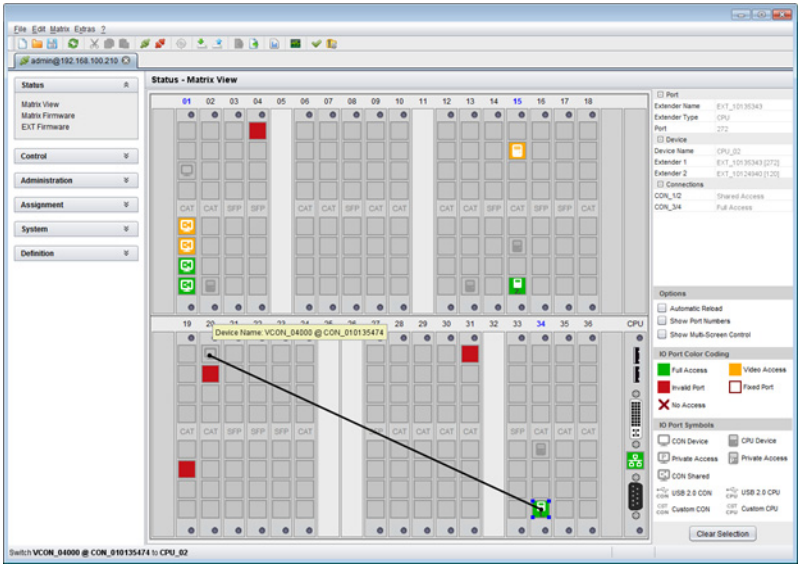
Button	Function
Send	Send effected switching operations to the matrix
Reset	Disconnect all existing connections within the matrix
Reload	Reload switching status

When activating the function **Auto Send** in the left lower corner of the working area, switching operations will be done immediately without confirmation by pressing the button **Send**.

When activating the function **Hide Devices w/o Extender Assignment** in the left lower corner of the working area, only these CON and CPU devices are shown that are assigned to an extender.

Possibility 2:

➔ Select **Status > Matrix View** in the task area.



*Menu **Status – Matrix View***

In order to perform switching operations between CON and CPU devices proceed as follows:

1. Move the mouse cursor to the port that has to be switched.
2. Hold down the left mouse button and move the cursor to the port that has to be connected to the initial port. The current cursor movement will be displayed by a black auxiliary line.
3. Release the left mouse button. A popup to select the available switching type (**Full Access**, **Video Access** or **Private Mode**) will be opened.
4. Select the desired switching type. The switching operation will be immediately executed. At the same time all extender units that are assigned to the involved devices will be switched.

If there is a red cross on a port when switching by using the **Matrix View**, the console to be connected does not have access rights to the respecting CPU at this port.

In order to disconnect existing connection between CON and CPU devices proceed as follows:

1. Click on the port that has to be disconnected by using the right mouse button.
2. Select the function **Disconnect** in the appearing popup. The connected ports will be immediately disconnected. At the same time all further connections of the extenders assigned to the involved devices will be disconnected.

6.4 CON Switch

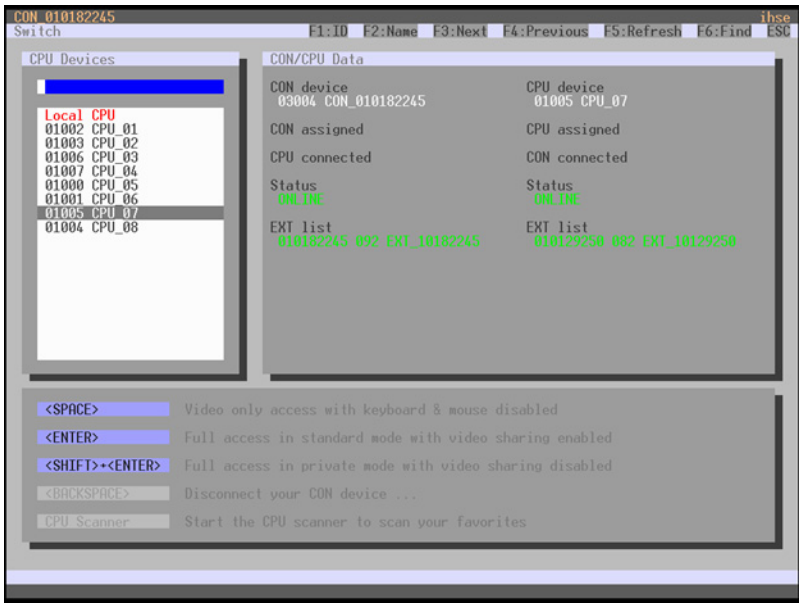
KVM extender CON Units connected to a local source (computer, CPU) can be locally switched via the matrix. Switching is performed between the local source and the KVM connection and can be executed via 'Hot Keys' or via OSD.

If you switch to the local source, the KVM connection will be automatically disconnected.

You have the following possibility to switch to the local source:

OSD

➔ Select **Switch** in the main menu.



*Menu – **CON Switch***

In order to switch to a local source, proceed as follows:

1. If you are not yet in the menu **Switch** of the OSD, start Command Mode with the 'Hot Key' (see Chapter 5.1, Page 53).
2. Press <o> to open OSD.
   You will see a list of all available CPUs as a start menu.
3. Switch to the CPU in the list that is called **Local CPU**.
   The switching operation to the local source will be immediately performed.

The local source (computer, CPU) will be only shown in the OSD, if the respecitve CON Unit includes the option for a local connection.

Alternatively, there are the following keyboard commands available in order to switch to the local source:

Function	Keyboard Command
Switching to extender connection	<'Hot Key'>, <k>, <1>, <Enter>
Switching to extender connection 2 (only with redundant CON Units)	<'Hot Key'>, <k>, <2>, <Enter>
Switching to the local source (computer, CPU)	<'Hot Key'>, <l>, <Enter>

6.5 Multi-Screen Control

The function Multi-Screen contains a switching of the USB-HID signal between different statically connected sources (computer, CPU) within a CON Device and can be performed in two different ways:

Switching via Mouse

The switching of the USB-HID signal can be made by a movement of the mouse pointer beyond the edge of the current display to a neighboring display according to the configuration (see Chapter 5.8.7, Page 135).

In order to perform a switching operation via movement of the mouse pointer, proceed as follows:

1. Move the mouse pointer to that edge of the display which borders vertically or horizontally to the neighboring display.
2. Move the mouse pointer beyond the edge of the display. The mouse pointer will appear on the respective position at the target display. The switching operation has been performed and the USB-HID signal will be now available at the target display.

Switching via Keyboard

The switching of the USB-HID signal can be made by the use of keyboard commands next to the mouse movement (configuration see Chapter 5.8.7, Page 135).

In order to perform a switching operation via keyboard command, proceed as follows:

1. Start Command Mode with the 'Hot Key' (see Chapter 5.1, Page 53).
2. Select the target display by pressing the respective key on the numeric pad of the keyboard.
   The switching operation will be performed and the USB-HID signal will be available at the target display.

You can select between the following switching operations:

Keyboard Command	Function
<current 'Hot Key'>, <Num 0>	Switching of the USB-HID signal to the own display (CON Unit with keyboard and mouse)
<current 'Hot Key'>, <Num 1>	Switching of the USB-HID signals to display #1
<current 'Hot Key'>, <Num 2>	Switching of the USB-HID signals to display #2
<current 'Hot Key'>, <Num 3>	Switching of the USB-HID signals to display #3
<current 'Hot Key'>, <Num 4>	Switching of the USB-HID signals to display #4

6.6 USB 2.0 Switching

Switching of USB 2.0 extender basically works like switching of KVM extenders. The following scenarios to switch USB 2.0 extenders are possible.

1. A extender unit with USB 2.0 will be created and assigned so an already existing device with existing KVM extender units (see Chapter 5.7, Page 111 or Chapter 5.8.1, Page 115).
2. A separate device for the extender unit with USB 2.0 will be created without assigning a KVM extender unit to that device. This possibility offers a separate switching of the USB 2.0 signal (see Chapter 5.7, Page 111 or Chapter 5.8.1, Page 115).

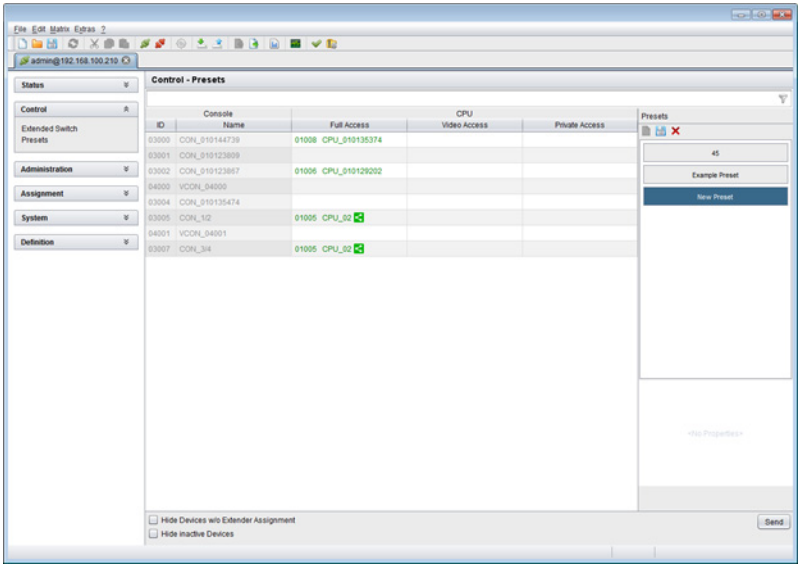
The separate switching of USB 2.0 signals required the use of the possibilities that extended switching offers (see Chapter 6.3, Page 164).
When switching USB 2.0 connections you should wait until the process of registration of the USB 2.0 devices has been completed before you switch to the next CPU (ca. 5-15 s). Otherwise the stability of the USB 2.0 connection can be affected negatively.

6.7 Presets

Predefined macros to switch the matrix without loading a new configuration can be created and activated in this menu.

You have the following possibility to access the menu:

➔ Select **Control > Presets** in the task area.



*Menu **Control – Presets***

To create a new switch macro proceed as follows:

1. Open a new switch macro by pressing on the symbol **New** in the right column of the working area.

   You are asked if the existing connections shall be taken over for the new switch macro.

2. Set the desired switching operations in the corresponding columns (**Full Access**, **Video Only** or **Private Mode**) by using a double click on the respective selection box or use the function for a disconnect (**Disconnect CPU**).

3. Save the created switch macro by clicking the symbol **Save** in the right column of the working area.

   A save dialog will be opened.

4. Enter a name or the new switch macro and confirm by pressing the button **Ok** in the save dialog.
5. By clicking on a selected switch macro with the right mouse button, you can create a copy of the current switch macro when using the option **Save as...**.
6. Already saved macros can be deleted by pressing the symbol **Delete**.

To load a predefined switching, proceed as follows:

1. Select the switch macro in the right column of the working area that has to be loaded.
2. Activate the selected switch macro by pressing the button **Send** on the bottom right of the working area.

A predefined switch macro can only be activated in online mode.
When loading presets, only these switching operations are taken into account that are compliant with the hardware and the configuration of the currently used matrix.

6.8 Serial Interface

The Draco tera offers the possibility to switch via a serial interface (RS232).

Detailed information for the serial interface and the corresponding switching commands are available in form of an API (application programming interface) upon request.

6.9 Power On and Power Down Functions

6.9.1 Restart

You have the following possibilities to perform a restart:

OSD

1. Select **Configuration > Restart Matrix** or **Restart IO Board** in the main menu to restart either the matrix or the I/O boards.
2. Confirm the selection with button **Okay**.

The matrix and the I/O boards will be restarted with the current settings.

Java Tool

➔ Select **Matrix > Restart Matrix** in the menu bar.

The matrix will be restarted with the current settings.

The boot process of the matrix might take longer, if there is no physical network connection available.

6.9.2 Factory Reset

You have the following possibilities to perform a reset of the system:

If you do a (factory) reset, all current settings and all configurations stored in the matrix will be lost. This also applies to the network parameters (reset to DHCP) and the admin password.

If a firmware update has been done since the delivery, the matrix will be set to the state defined there.

OSD

1. Select **Configuration > Factory Reset** in the main menu.
2. Confirm the selection with the button **Okay**.

The matrix will be reset to factory settings.

6.9.3 Power Down

You have the following possibilities to perform a shut down of the system or single components:

OSD

In order to shut down the system, proceed as follows:

1. Select **Configuration > Shut down Matrix** in the main menu.
2. Confirm the selection with the button **Okay**.

The matrix will be shut down.

In order to shut down an I/O board, proceed as followsr:

1. Select **Configuration > Shut Down IO Board** in the main menu.
2. Confirm the selection with the button **Okay**.

The I/O board will be shut down.

6.10 Summary of Keyboard Commands

In the following you find a summary of keyboard commands that can activate extender and matrix functions after executing the 'Hot Key'.

Extender

Keyboard Command	Description
<'Hot Key'>, <a>	Download of DDC information of the monitor connected to the CON Unit into the CPU Unit
<'Hot Key'>, <k>, <1>, <Enter>	Switch to the KVM connection (only with HDMI CON Units with available connection for a local source)
<'Hot Key'>, <k>, <2>, <Enter>	Switch to the KVM connection 2 (only with HDMI CON Units with available connection for a local source and a redundant interconnection)
<'Hot Key'>, <l>, <Enter>	Switch to local source (computer, CPU) (only with HDMI CON Units with available connection for a local source)
<'Hot Key'>, <h>, <w>, <Enter>	USB-HID Ghosting: Writing the device descriptions of the input devices connected to the CON Unit into the CPU Unit. Activating the emulation in the CPU Unit.
<'Hot Key'>, <h>, <e>, <Enter>	Activating the emulation of already stored device descriptions in the CPU Unit
<'Hot Key', <h>, <d>, <Enter>	Deactivating the emulation of active device descriptions in the CPU Unit. The input devices connected to the CON Unit will be now passed transparently to the source (computer, CPU).
<'Hot Key', <h>, <r>, <Enter>	Deactivating the emulation of active device descriptions in the CPU Unit. Deleting the descriptions out of the CPU Unit. The input devices connected to the CON Unit will be now passed transparently to the source (computer, CPU).

Matrix

Keyboard Command	Description
<'Hot Key'>, <o>	Open OSD
<‘Hot Key‘>, <m>, <o>	Open OSD of the master matrix in a cascaded environment

Keyboard Command	Description
<'Hot Key'>, <s>, <o>	Open OSD of the sub matrix in a cascaded environment
<'Hot Key'>, <Enter>	Set a KVM connection (keyboard, mouse and video) to the selected source (computer, CPU)
<'Hot Key'>, <Space>	Set a video only connection to the selected source (computer, CPU)
<'Hot Key'>, <Left Shift> + <Enter>	Set a Private Mode connection to the selected source (computer, CPU)
<'Hot Key'>, <Backspace>	Close the current connection of the own console
<'Hot Key'>, <p>	Switch back to the previous connected source (computer, CPU) with a KVM connection
<'Hot Key'>, <1> ... <16>, <Enter> (<Space> or <Left Shift> + <Enter>)	Switch to a source (computer, CPU) stored in the Favorite List with a KVM connection (video only or Private-Mode connection)
<'Hot Key'>, <F1> ... <F16>	Execute a predefined macro
<'Hot Key'>, <c>, <new 'Hot Key'-Code>, <Enter>	Change the 'Hot Key' according to the predefined 'Hot Key' table
<'Hot Key'>, <c>, <0>, <new 'Hot Key' key >, <Enter>	Define freely selectable 'Hot Key'
<'Hot Key'>, <f>, <new 'Hot Key'-Code>, <Enter>	Change the 'Hot Key' for direct OSD access according to the predefined 'Hot Key' table
<'Hot Key'>, <f>, <0>, <new 'Hot Key' key>, <Enter>	Define freely selectable 'Hot Key' for direct OSD access
<'Hot Key'>, <Num 0>	Switching of the USB-HID signal to the own display (CON Unit with keyboard and mouse)
<'Hot Key'>, <Num 1>	Switching of the USB-HID signals to display #1
<'Hot Key'>, <Num 2>	Switching of the USB-HID signals to display #2
<'Hot Key'>, <Num 3>	Switching of the USB-HID signals to display #3
<'Hot Key'>, <Num 4>	Switching of the USB-HID signals to display #4

7 Specifications

7.1 Interfaces

7.1.1 DVI-D Single Link

The video interface supports the DVI-D protocol. All signals that comply to DVI-D Single Link norm can be transmitted. This includes e.g. monitor resolutions such as 1920x1200@60Hz, Full HD (1080p) or 2K HD (up to 2048x1152). Data rate is limited to 165 MPixel/s.

7.1.2 USB-HID

Our devices with USB-HID interface support a maximum of two devices with USB-HID protocol. Each USB-HID port provides a maximum current of 100 mA.

Keyboard

Compatible with most USB keyboards. Certain keyboards with additional functions may require custom firmware to operate. Keyboards with an integral USB Hub (Mac keyboards e.g.) are also supported.

Mouse

Compatible with most 2-button, 3-button and scroll mice.

Other USB-HID devices

The proprietary USB emulation also supports certain other USB-HID devices, such as specific touch screens, graphic tablets, barcode scanners or special keyboards. Support cannot be guaranteed, however, for every USB-HID device.

Only two USB-HID devices are supported concurrently, such as keyboard and mouse or keyboard and touch screen. A hub is allowed, but it does not increase the number of HID devices allowed.
To support other USB 'non-HID' devices, such as scanners, web cams or memory devices, choose our devices with transparent USB support.

7.1.3 RJ45 (Network)

The communication of the Cat X devices requires a 1000BASE-T connection.

The cabling has to be done according to EIA/TIA-568-B (1000BASE-T) with RJ45 connectors at both ends. All of the four wire pairs are used in both directions. The cabling is suitable for a full duplex operation. For the cable connection to a source (computer, CPU), a crossed network cable (cross cable) has to be used.

7.1.4 RS-232 (Serial)

The communication takes place with a transmission speed of up to 115.2 KBaud, regardless of the file format. The transmission takes place with eight data bits and a stop bit, but without a parity bit. Limited hardware handshake (DSR) is possible.

7.1.5 RJ45 (Interconnect)

The communication of the Cat X devices requires a 1000BASE-T connection.

Connector wiring must comply with EIA/TIA-568-B (1000BASE-T), with RJ45 connectors at both ends. All four cable wire pairs are used.

7.1.6 Fiber SFP Type LC (Interconnect)

The communication of fiber devices is performed via Gigabit SFPs that have to be connected to suitable fibers fitted with connectors type LC (see Chapter 7.2.2, Page 182).

The correct function of the device can only be guaranteed with SFPs provided by the manufacturer.

SFP modules can be damaged by electrostatic discharge (ESD).
➔ Please consider ESD handling specifications.

7.1.7 SDI (Interconnect)

The communication of the SDI devices requires a mini coax connection with mini BNC connectors or 3G SFPs with transmission speeds of 0,360 Gbit/s (SD-SDI, SMPTE 259M), 1,485 Gbit/s (HD-SDI, SMPTE 292M) and 2,970 Gbit/s (3G SDI).

7.2 Interconnect Cable

7.2.1 Cat X

A point-to-point connection is required. Operation with several patch fields is possible. Routing over an active network component, such as an Ethernet Hub, Router or Matrix, is not allowed.

- ➔ Avoid routing Cat X cables along power cables.
- ➔ If the site has 3-phase AC power, try to ensure that CPU Unit and CON Unit are on the same phase.

To maintain regulatory EMC compliance, correctly installed shielded Cat X cable must be used throughout the interconnection link.

To maintain regulatory EMC compliance, all Cat X cables need to carry ferrites on both cable ends close to the device.

Type of Interconnect Cable

The Draco tera requires interconnect cabling specified for Gigabit Ethernet (1000BASE-T). The use of solid-core (AWG24), shielded, Cat 5e (or better) is recommended.

Cat X Solid-Core Cable AWG24	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG24. Connection according to EIA/TIA-568-B (1000BASE-T).
Cat X Patch Cable AWG26/8	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG26/8. Connection according to EIA/TIA-568-B (1000BASE-T).

The use of flexible cables (patch cables) type AWG26/8 is possible, however the maximum possible extension distance is halved.

Maximum Acceptable Cable Length

Cat X Installation Cable AWG24	140 m (400 ft)
Cat X Patch Cable AWG26/8	70 m (200 ft)

7.2.2 Fiber

A point-to-point connection is necessary. Operation with multiple patch panels is allowed. Routing over active network components, such as Ethernet Hubs, Matrixes or Routers, is not allowed.

Type of Interconnect Cable

(Cable notations according to VDE)

Type of cable	Specifications
Single-mode 9µm	• Two fibers 9µm • I-V(ZN)H 2E9 (in-house patch cable) • I-V(ZN)HH 2E9 (in-house breakout cable) • I/AD(ZN)H 4E9 (in-house or outdoor breakout cable, resistant) • A/DQ(ZN)B2Y 4G9 (outdoor cable, with protection against rodents)
Multi-mode 50µm	• Two fibers 50µm • I-V(ZN)H 2G50 (in-house patch cable) • I/AD(ZN)H 4G50 (in-house or outdoor breakout cable, resistant)
Multi-mode 62.5µm	• Two fibers 62.5µm • I-V(ZN)HH 2G62,5 (in-house breakout cable) • A/DQ(ZN)B2Y 4G62,5 (outdoor cable, with protection against rodents)

Only use Single-mode connection cables for fiber connections that are based on 3G SFPs.

Maximum Acceptable Cable Length

Type of cable	1.25 Gbps	3.125 Gbps
Single-mode 9µm	10,000 m (32,800 ft)	5,000 m (16,400 ft)
Multi-mode 50µm (OM3)	1,000 m (3,280 ft)	500 m (1,640 ft)
Multi-mode 50µm	400 m (1,300 ft)	200 m (650 ft)
Multi-mode 62.5µm	200 m (650 ft)	100 m (325 ft)

If you use single-mode SFPs with multi-mode fibers, you normally can increase the maximum acceptable cable length.

Type of Connector

Connector	LC Connector

7.2.3 Coaxial

A point-to-point connection is necessary.

Type of Interconnect Cable

Cable Type	Specifications
Mini coaxial cable AWG 18	RG 6 impedance 75 Ω

Maximum Acceptable Cable Length

Band Width	Maximum Acceptable Cable Length
0.270 Gbit/s	400 m (1,312 ft)
1.485 Gbit/s	140 m (459 ft)
2.970 Gbit/s	120 m (394 ft)

Type of Connector

Connector	Mini BNC connector

7.3 Supported Peripherals

The following KVM extenders are released for the use with the Draco tera:

The use of KVM extenders with upgrade modules or USB 2.0 modules does not limit the operation with the Draco tera.

7.3.1 KVM Extenders with Cat X Connection

K477 Series

Type	Description
L477-1SHC	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID
R477-1SHC	Draco tera KVM CON Unit, Single-Head, 2x USB-HID
L477-1SECA	Draco tera KVM CPU Unit, Single-Head, Analog Audio, 2x USB-HID and 2x USB 2.0
R477-1SECA	Draco tera KVM CON Unit, Single-Head, Analog Audio, 2x USB-HID and 2x USB 2.0
L477-1SECD	Draco tera KVM CPU Unit, Single-Head, Digital Audio, 2x USB-HID and 2x USB 2.0
R477-1SECD	Draco tera KVM CON Unit, Single-Head, Digital Audio, 2x USB-HID and 2x USB 2.0
L477-1STC	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID, 4x USB 2.0
R477-1STC	Draco tera KVM CON Unit, Single-Head, 2x USB-HID, 4x USB 2.0
L477-2S4C	Draco tera KVM CPU Unit, Dual-Head, 4x USB-HID
R477-2S4C	Draco tera KVM CON Unit, Dual-Head, 4x USB-HID
L477-SHCV	Draco tera KVM CPU Unit, Single-Head, DVI-I input (VGA), 2x USB-HID
R477-SHCV	Draco tera KVM CON Unit, Single-Head, DVI-I Input (VGA), 2x USB-HID

K474 Series

Type	Description
L474-BSHC	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID
R474-BSHC	Draco tera KVM CON Unit, Single-Head, 2x USB-HID
L474-BSHCV	Draco tera KVM CPU Unit, Single-Head, DVI-I input (VGA), 2x USB-HID
R474-BSHCV	Draco tera KVM CON Unit, Single-Head, IR receiver, 2x USB-HID

7.3.2 KVM Extenders with Fiber Connection (Single-Mode)

K477 Series

Type	Description
L477-1SHS	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID
R477-1SHS	Draco tera KVM CON Unit, Single-Head, 2x USB-HID
L477-1SHX	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID, XV
R477-1SHX	Draco tera KVM CON Unit, Single-Head, 2x USB-HID, XV
L477-1SESA	Draco tera KVM CPU Unit, Single-Head, Analog Audio, 2x USB-HID and 2x USB 2.0
R477-1SESA	Draco tera KVM CON Unit, Single-Head, Analog-Audio, 2x USB-HID and 2x USB 2.0
L477-1SEXA	Draco tera KVM CPU Unit, Single-Head, Analog Audio, 2x USB-HID and 2x USB 2.0, XV
R477-1SEXA	Draco tera KVM CON Unit, Single-Head, Analog Audio, 2x USB-HID and 2x USB 2.0, XV
L477-1SESD	Draco tera KVM CPU Unit, Single-Head, Digital Audio, 2x USB-HID and 2x USB 2.0
R477-1SESD	Draco tera KVM CON Unit, Single-Head, Digital Audio2x USB-HID and 2x USB 2.0
L477-1SEXD	Draco tera KVM CPU Unit, Single-Head, Digital Audio, 2x USB-HID and 2x USB 2.0, XV
R477-1SEXD	Draco tera KVM CON Unit, Single-Head, Digital Audio, 2x USB-HID and 2x USB 2.0, XV
L477-1STS	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID, 4x USB 2.0
R477-1STS	Draco tera KVM CON Unit, Single-Head, 2x USB-HID, 4x USB 2.0
L477-1STX	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID, 4x USB 2.0, XV
R477-1STX	Draco tera KVM CON Unit, Single-Head, 2x USB-HID, 4x USB 2.0, XV
L477-2S4S	Draco tera KVM CPU Unit, Dual-Head, 4x USB-HID
R477-2S4S	Draco tera KVM CON Unit, Dual-Head, 4x USB-HID

Type	Description
L477-2S4X	Draco tera KVM CPU Unit, Dual-Head, 4x USB-HID, XV
R477-2S4X	Draco tera KVM CON Unit, Dual-Head, 4x USB-HID, XV
L477-1SHSV	Draco tera KVM CPU Unit, Single-Head, DVI-I input (VGA), 2x USB-HID
R477-1SHSV	Draco tera KVM CON Unit, IR receiver, 2x USB-HID
L477-1SHXV	Draco tera KVM CPU Unit, Single-Head, DVI-I Input (VGA), 2x USB-HID, XV
R477-1SHXV	Draco tera KVM CON Unit, Single-HEad, DVI-I Input (VGA), 2x USB-HID, XV

K474 Series

Type	Description
L474-BSHS	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID
R474-BSHS	Draco tera KVM CON Unit, Single-Head, 2x USB-HID
L474-BSHX	Draco tera KVM CPU Unit, Single-Head, 2x USB-HID, XV
R474-BSHX	Draco tera KVM CON Unit, Single-Head, 2x USB-HID, XV
L474-BSHSV	Draco tera KVM CPU Unit, Single-Head, DVI-I Input (VGA), 2x USB-HID
R474-BSHSV	Draco tera KVM CON Unit, Single-Head, IR receiver, 2x USB-HID
L474-BSHXV	Draco tera KVM CPU Unit, Single-Head, DVI-I Input (VGA), 2x USB-HID, XV
R474-BSHXV	Draco tera KVM CON Unit, Single-Head, DVI-I Input (VGA), 2x USB-HID, XV

7.3.3 USB 2.0 Extenders with Cat X Connection

K474 Series

Type	Description
L474-BXTC	Draco tera USB 2.0 CPU Unit, 4x USB 2.0
R474-BXTC	Draco tera USB 2.0 CON Unit, 4x USB 2.0

7.3.4 USB 2.0 Extenders with Fiber Connection (Single-Mode)

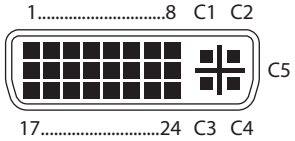
K474 Series

Type	Description
L474-BXTS	Draco tera USB 2.0 CPU Unit, 4x USB 2.0
R474-BXTS	Draco tera USB 2.0 CON Unit, 4x USB 2.0
L474-BXTX	Draco tera USB 2.0 CPU Unit, 4x USB 2.0, XV
R474-BXTX	Draco tera USB 2.0 CON Unit, 4x USB 2.0, XV

7.4 Connector Pinouts

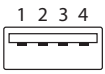
7.4.1 CPU Board

Connector DVI-D Single-Link

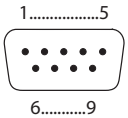


Pin	Signal	Pin	Signal	Pin	Signal
1	T.M.D.S data 2 –	9	T.M.D.S data 1 –	17	T.M.D.S data 0 –
2	T.M.D.S data 2 +	10	T.M.D.S data 1 +	18	T.M.D.S data 0 +
3	T.M.D.S data 2 GND	11	T.M.D.S data 1 GND	19	T.M.D.S data 0 GND
4	n.c.	12	n.c.	20	n.c.
5	n.c.	13	n.c.	21	n.c.
6	DDC Input (SCL)	14	+5VDC high impedance	22	T.M.D.S clock GND
7	DDC Output (SDA)	15	GND	23	T.M.D.S clock +
8	Internal use	16	Hot Plug recognition	24	T.M.D.S clock –
C1	Internal use			C3	Internal use
C2	n.c.	C5	GND	C4	Internal use

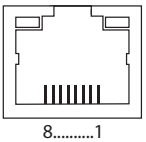
Connector USB Type A

Picture	Pin	Signal	Color
	1	VCC (+5VDC)	Red
	2	Data –	White
	3	Data +	Green
	4	GND	Black

D-Sub 9 (Serial) RS232

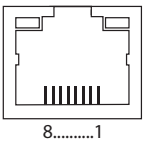
Picture	Pin	Signal	Pin	Signal
	1	n.c.	6	DSR
	2	RxD	7	RTS
	3	TxD	8	CTS
	4	DTR	9	n.c.
	5	GND		

RJ45

Picture	Pin	Signal	Pin	Signal
	1	D1+	5	n.c
	2	D1–	6	D2–
	3	D2+	7	n.c
	4	n.c	8	n.c

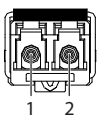
7.4.2 I/O Port Cat X

RJ45

Picture	Pin	Signal	Pin	Signal
	1	D1+	5	D3–
	2	D1–	6	D2–
	3	D2+	7	D4+
	4	D3+	8	D4–

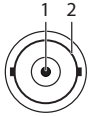
7.4.3 I/O Port SFP

Fiber SFP Typ LC

Picture	Diode	Signal
	1	Data OUT
	2	Data IN

7.4.4 I/O Port SDI

Mini BNC (SDI)

Picture	Pin	Signal
	1	Data IN
	2	GND

7.5 Power Supply

Nominal Current/Nominal Voltage

Draco tera 288	12 A, 100-240 V_{ac}, 50/60 Hz
Draco tera 160	9 A, 100-240 V_{ac}, 50/60 Hz
Draco tera 80, 48	5 A, 100-240 V_{ac}, 50/60 Hz

Power Requirement

Draco tera 288	max. 202 W without I/O boards
Draco tera 160	max. 188 W without I/O boards
Draco tera 80	max. 99 W without I/O boards
Draco tera 48	max. 94 W without I/O boards
I/O Board	max. 13 W

7.6 Environmental Conditions

Operating Temperature	41 to 113°F (5 to 45°C)
Storage Temperature	–13 to 140°F (–25 to 60°C)
Relative Humidity	Max. 80% non-condensing

7.7 Size

Draco tera 288

Matrix	483 x 578 x 330 mm (19.0" x 22.8" x 12.0")
Shipping Box	650 x 680 x 760 mm (25.6" x 26.8" x 29.9")

Draco tera 160

Matrix	483 x 400 x 330 mm (19.0" x 15.8" x 12.0")
Shipping Box	650 x 680 x 540 mm (25.6" x 26.8" x 21.3")

Draco tera 80

Matrix	483 x 178 x 230 mm (19.0" x 7.0" x 9.1")
Shipping Box	640 x 570 x 360 mm (25.2" x 22.4" x 14.2")

Draco tera 48

Matrix	483 x 133 x 230 mm (19.0" x 5.3" x 9.1")
Shipping Box	640 x 570 x 316 mm (25.2" x 22.4" x 12.4")

7.8 Shipping Weight

Draco tera 288

Matrix	34.6 kg (76.2 lb) fully equipped
Shipping Box	41.1 kg (90.6 lb)

Draco tera 160

Matrix	26.3 kg (60.0 lb) fully equipped
Shipping Box	31.7 kg (69.9 lb)

Draco tera 80

Matrix	11.1 kg (24.5 lb) fully equipped
Shipping Box	15.6 kg (34.4 lb)

Draco tera 48

Matrix	8.9 kg (19.6 lb) fully equipped
Shipping Box	12.1 kg (26.7 lb)

7.9 MTBF

The following table contains the mean time between failure (MTBF) in power-on hours (POH). The estimate is based on the FIT rates of the parts included. FIT rates are based on normalized environmental conditions of T = 60°C and activation energy (E_a) of 0.7 eV. Calculations are based on 90% confidence limit.

We estimate that inside the housing, temperature will be 15°C higher than the ambient temperature. Therefore, the MTBF calculation refers to an ambient temperature of 45°C. The humidity is limited to 60%.

Draco tera 288 chassis	260,000 POH
Draco tera 160 chassis	310,000 POH
Draco tera 80 chassis	320,000 POH
Draco tera 48 chassis	350,000 POH
CPU board	480,000 POH
I/O board SFP	500,000 POH
I/O board Cat X	410,000 POH
Draco tera 288/160 PSU	200,000 POH
Draco tera 80/48 PSU	130,000 POH

8 Maintenance

The Draco tera contains various components and assemblies that can be maintained. All relevant components and assemblies are hot swappable and can be removed and exchanged during operation.

The following exchangeable components can be found within the Draco tera:

8.1 Power Supply Units

In order to exchange the power supply units, proceed as follows:

1. Make sure that the power cord cable is removed from the power supply that has to be exchanged.
2. Unlock the locking screw(s).
3. With the power supply units of Draco tera 288 and 160, turn the unlocked bracket down.
4. Pull the power supply unit out of the corresponding slot.
5. Push a new or maintained power supply unit into the slot and lock it accordingly.
6. Connect the power cord cable to the power supply unit. It will be recognized by the system and can be used afterwards.

8.2 Fan trays

In order to exchange the fan trays, proceed as follows:

1. Unlock the locking screw(s).
2. Pull the fan tray out of the corresponding slot by using the provided mount.
3. Push a new or maintained fan tray into the slot.
4. Lock the fan tray accordingly. It will be recognized by the system and can be used afterwards.

8.3 CPU Board

In order to exchange the CPU board, proceed as follows:

1. Pull the locking pin slowly out of the CPU board up to the stop.

   Wait until the CPU board will be deregistered from the matrix. The deregistration will be confirmed by a permanent green light of the status LED #1 at the CPU board (see Chapter 3.7.1, Page 19).
2. Remove all cables from the CPU board.
3. Pull the CPU board out of the corresponding slot by using the locking pin.
4. Push a new or maintained CPU board into the slot and lock it accordingly.

   A successful registration of the CPU board will be shown by a permanent green flashing of status LED #1.
5. Connect all cables to the CPU board according to the exchanged board.

When exchanging a CPU board the new one will automatically receive the current matrix configuration. During CPU board exchange the Draco tera should not be switched off.

8.4 I/O-Board

In order to exchange a I/O board, proceed as follows:

1. Pull the locking pin slowly out of the I/O board up to the stop.

   Wait until the I/O board will be deregistered from the matrix. The deregistration will be confirmed by a permanent green light of the status LED #1 at the CPU board (see Chapter 3.7.1, Page 19).
2. Remove all cables from the I/O board.
3. Pull the I/O board out of the corresponding slot by using the locking pin.
4. Push a new or maintained CPU board into the slot and lock it accordingly.

   A successful registration of the CPU board will be shown by a permantent green flashing of status LED #1.
5. Connect all cables to the I/O board according to the exchanged board.

For the use in a 24/7 operation it is recommended to keep all relevant components of the matrix including a chassis as spare parts available.

8.5 Filter Pads

The pollution of the filter pads has to be checked regularly and the pads have to be cleaned with slight compressed air or suction by the operator of the system.

The inspection cycle depends on the ambient air and cannot be determined generally. A period of 6 months should not be exceeded.

A replacement of the filter pads or the filter trays has to be performed every year.

In order to replace a filter pad, proceed as follows:

1. Pull the filter pad together with the mounting frame out of the proper slot by using the handle.
2. Press the used filter pad out of the mounting frame.
3. Insert a new filter pad into the mounting frame.
4. Put the mounting frame back into the slot again.

9 Troubleshooting

In the following chapters, support for problems with the Draco tera matrix is provided. This help is based on a working point-to-point extender connection concerning the contents. Please ensure before running your extenders with the matrix that they work over a peer-to-peer connection. This can be supported by the use of a Cat X or fiber coupler. If you have problems referring to this, the manuals of the respective extenders will offer support.

9.1 External Failure

Diagnosis	Possible Reason	Measure
Matrix cannot be started anymore.	Fuse at the standard appliance outlet.	➔ Check fuse.

9.2 Video Interference

Diagnosis	Possible Reason	Measure
Opening the OSD not possible	No OSD jumper set	➔ Set jumper 11 on the CON unit.
Incorrect video display	Cable connection disturbed	➔ Check the connection, length and quality of the interconnect cable to the units.

9.3 Malfunction of Fans

Diagnosis	Possible Reason	Measure
Fans only run under full load	Communication to fan tray is disturbed	➔ Removal and und reinstallation of the fan tray ➔ Swap both fan trays to the other slot. ➔ Restart the matrix.
Fans do not run, LED **OK** on	Fans defective	➔ Contact your dealer
Fans do not run, LED **OK** off	Power supply	➔ Check power supply and power connection

9.4 Malfunction of Power Supply Units

Diagnosis	Possible Reason	Measure
Matrix cannot be started	Power supply units not locked correctly	➔ Check lock and plug-in of the power supply units
	No power supply available	➔ Check, if cables for the power supply are connected correctly
	Power supply units are not switched on	➔ Check slide to switch on the power supply units

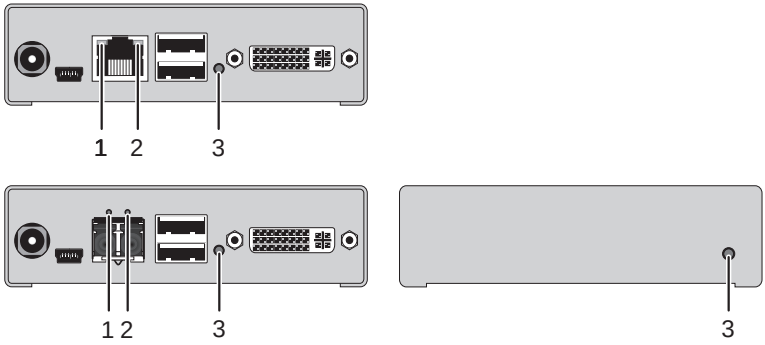
9.5 Network Error

Diagnosis	Possible Reason	Measure
Network settings are not assumed after editing.	Restart of the matrix not yet completed.	➔ Do a restart.

9.6 Failure at the Matrix

Diagnosis	Possible Reason	Measure
Serial control impossible or only restrictedly possible.	Different Baud rate of CPU and matrix.	➔ Adapt Baud rate in the matrix and in the CPU (see Chapter 5.3.2, Page 72).
Serial control via RJ45 port not possible.	Wrong network cable.	➔ Use a crossed network cable
Port definitions as USB 2.0 invalid.	Restart of the matrix not yet completed.	➔ Do a restart.

9.7 Blank Screen



Rear View *Front View*

Diagnosis	Possible Reason	Measure
Monitors remains dark after switching operation	Switching to a CPU Port without active Source (computer, CPU).	➔ Switching to a CPU Port with an active source (computer, CPU).
	Connection of a console with a CON port or connection of a CPU to a CPU port not established correctly.	➔ Check connections regarding CON and CPU ports at the matrix.
LED **1** on or LED **2** off	Connections CON unit, matrix and CPU unit.	➔ Check connecting cables and connectors. (No cable, cable break, CPU/CON unit offline, CPU/CON unit connected to the wrong port)
LED **3** off	Power supply	➔ Check power supply units and the connection to the power network.

10 Technical Support

Prior to contacting support please ensure you have read this manual, and then installed and set-up your Draco tera as recommended.

10.1 Support Checklist

To efficiently handle your request it is necessary to complete our checklist for support and problem cases (Download). Keep the following information available before you call:

- Company, name, phone number and email
- Type and serial number of the device (see bottom of device)
- Date and number of sales receipt, name of dealer if necessary
- Issue date of the existing manual
- Nature, circumstances and duration of the problem
- Involved components (such as graphic source/CPU, OS, graphic card, monitor, USB-HID/USB 2.0 devices, interconnect cable) including manufacturer and model number
- Results from any testing you have done

10.2 Shipping Checklist

1. To return your device, contact your dealer to obtain a RMA number (Return-Material-Authorization).
2. Package your devices carefully, preferably using the original box. Add all pieces which you received originally.
3. Note your RMA number visibly on your shipment.

Devices that are sent in without a RMA number cannot be accepted. The shipment will be sent back without being opened, postage unpaid.

11 Certificates

11.1 CE Declaration Of Conformity

The products listed below in the form as delivered comply with the provisions of the following European Directives:

2004/108/EG Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility

CE Marking 2009

Product list:

K480 Serie

The products comply with the following harmonized standards for Information Technology Equipment:

- EN 55022:2006 + A1:2007 (Class A)
- EN 55024:1998 + A1:2001 + A2:2003

This declaration certifies the conformity to the specified directives but contains no assurance of properties. The safety instructions and installation guidelines noted in this manual shall be considered in detail. Compliance with the specifications for cable lengths and types is mandatory.

Manufacturer:

IHSE GmbH
Maybachstrasse 11
88094 Oberteuringen
Deutschland

Oberteuringen, 26 January 2010

The Management

Use in a Domestic Environment

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

11.2 North American Regulatory Compliance

This equipment has been found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Shielded cables must be used with this equipment to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

All power supplies are certified to the relevant major international safety standards.

11.3 Product Safety

The product safety of the devices is proven by the compliance to the following standards:

- IEC 60950-1A1:2010
- EN 60950-1/A12:2011
- UL 60950-1-2007
- CAN/CSA-C22.2 60950-1-07

The compliance is verified and confirmed by TÜV Süd, Germany.

11.4 WEEE

The manufacturer complies with the EU Directive 2012/19/EU on the prevention of waste electrical and electronic equipment (WEEE).

The device labels carry a respective marking.

11.5 RoHS/RoHS 2

This device complies with the Directive 2011/65/EU of the European Parliament and of the council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2, RoHS II).

The device labels carry a respective marking.

12 Glossary

The following terms are commonly used in this guide or in video and KVM technology:

Term	Explanation
AES/EBU	Digital audio standard that is officially known as AES3 and that is used for carrying digital audio signals between devices.
Cat X	Any Cat 5e (Cat 6, Cat 7) cable
CGA	The Color Graphics Adapter (CGA) is an old analog graphic standard with up to 16 displayable colors and a maximum resolution of 640x400 pixels.
Component Video	The Component Video (YPbPr) is a high-quality video standard that consists of three independently and separately transmittable video signals, the luminance signal and two color difference signals.
Composite Video	The Composite Video is also called CVBS and it is part of the PAL TV standard.
CON Unit	Component of a Draco tera or Media Extender to connect to the console (monitor(s), keyboard and mouse; optionally also with USB 2.0 devices)
Console	Keyboard, mouse and monitor
CPU Unit	Component of a Draco tera or Media Extender to connect to a source (computer, CPU)
CVBS	The analog color video baseband signal (CVBS) is also called Composite Video and it is part of the PAL TV standard.
DDC	The Display Data Channel (DDC) is a serial communication interface between monitor and source (computer, CPU). It allows a data exchange via monitor cable and an automatic installation and configuration of a monitor driver by the operating system.
Dual Access	A system to operate a source (computer, CPU) from two consoles
Dual Link	A DVI-D interface for resolutions up to 2560x2048 by signal transmission of up to 330 MPixel/s (24-bit)
Dual-Head	A system with two video connections

Term	Explanation
DVI	Digital video standard, introduced by the Digital Display Working Group (http://www.ddwg.org). Single Link and Dual Link standard are distinguished. The signals have TMDS level.
DVI-I	A combined signal (digital and analog) that allows running a VGA monitor at a DVI-I port – in contrast to DVI-D (see DVI).
EGA	The Enhanced Graphics Adapter (EGA) is an old analog graphic standard, introduced by IBM in 1984. A D-Sub 9 connector is used for connection.
Fiber	Single-mode or multi-mode fiber cables
HDMI	An interface for an all-digital transmission of audio and video data. It is differentiated between the HDMI standards 1.0 to 1.4a. The signals have TMDS level.
KVM	Keyboard, video and mouse
Mini-XLR	Industrial standard for electrical plug connections (3 pole) for the transmission of digital audio and control signals
Multi-mode	62.5µ multi-mode fiber cable or 50µ multi-mode fiber cable
OSD	The On-Screen-Display is used to display information or to operate a device.
Quad-Head	A system with four video connections
RCA (Cinch)	A not standardized plug connection for transmission of electrical audio and video signals, especially with coaxial cables
S/PDIF	A digital audio interconnect that is used in consumer audio equipment over relatively short distances.
SFP	SFPs (Small Form Factor Pluggable) are pluggable interface modules for Gigabit connections. SFP modules are available for Cat X and fiber interconnect cables.
Single Link	A DVI-D interface for resolutions up to 1920x1200 by signal transmission of up to 165 MPixel/s (24-bit). Alternative frequencies are Full HD (1080p), 2K HD (2048x1080) and 2048x1152.
Single-Head	A system with one video connection
Single-mode	9µ single-mode fiber cable

Term	Explanation
S-Video (Y/C)	The S-Video (Y/C) is a video format transmitting luminance and chrominance signals separately. Thereby it has a higher quality standard than CVBS.
TOSLINK	Standardized fiber connection system for digital transmission of audio signals (F05 plug connection)
Triple-Head	A system with three video connections
USB-HID	USB-HID devices (Human Interface Device) allow for data input. There is no need for a special driver during installation; "New USB-HID device found" is reported. Typical HID devices include keyboards, mice, graphics tablets and touch screens. Storage, video and audio devices are **not** HID.
VGA	Video Graphics Array (VGA) is a computer graphics standard with a typical resolution of 640x480 pixels and up to 262,144 colors. It can be seen as a follower of the graphics standards MDA, CGA and EGA.

12.1 Matrix specific Glossary

Term	Explanation
Auto Disconnect	Matrix function that allows an automatic disconnect between a console and a CPU, if OSD is opened via this console.
Auto Logout	Matrix function that describes the duration of inactivity after the user has been logged out from the OSD at this console.
CON Device	Logical term that summarizes several physical extenders to switch more complex console systems via matrix.
CON Timeout	Matrix function that allows an automatic disconnect of the own console from the connected CPU after a predefined time.
Console ACL	Console Access Control List is a list that shows the respective switching rights for the various consoles.
CPU Auto Connect	Matrix function that allows an automatic connection establishment between the own console and a random CPU that is available.
CPU Device	Logical term that summarizes several physical extenders to switch more complex CPU systems via matrix.
CPU Timeout	Matrix function that allows the user to disconnect after a predefined period of time of inactivity from the respective CPU.
EXT Unit	Part or extender board of a CON or CPU unit with a connection to the matrix. A CON or CPU unit can consist of several EXT devices.
Force Connect	Matrix function that allows to switch with the own console to a CPU that is already used and in doing so to take keyboard and mouse control. The connected console so far loses K/M control, but keeps video.
Force Disconnect	Matrix function that allows to switch with the own console to a CPU that is already used and in doing so to take KVM control. The connected console so far loses complete KVM control.
Java Tool	Java based control and configuration tool for the Draco tera matrix.

Term	Explanation
Keyboard Connect	Matrix function that allows taking over the keyboard control of an inactive console.
Macro Keys	Programmable keys that can execute a stringing together of commands to the matrix.
Mouse Connect	Matrix function that allows taking the mouse control of an inactive console.
Non-Blocking-Access	Matrix configuration where no user can be disturbed by an activity of another user.
OSD Timeout	Matrix function that closes the OSD automatically after a predefined period of time of inactivity.
Release Time	Matrix function that allows a console that is connected with the same CPU to release the K/M control after a predefined time.
Service Mode	Defined maintenance condition that allows updating of extenders that are connected to the matrix.
Tie-Line	Communication connection to and between extension modules in a network environment.
User ACL	User Access Control List is a list that shows the respective switching rights for the various users.
Video Sharing	Matrix function that allows switching from the own console to any CPU with video.